

DOCUMENT RESUME

ED 205 710

CE 029 678

TITLE Industrial Arts Safety Guide. Chinese. Bilingual Education Resource Series.

INSTITUTION Seattle School District 1, Wash.; Washington Office of the State Superintendent of Public Instruction, Olympia.

SPONS AGENCY Office of Education (DHEW), Washington, D.C.

PUB DATE 78

NOTE 130p.; Not available in paper copy due to small print. For related documents see CE 029 677-682.

LANGUAGE English; Chinese

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.

DESCRIPTORS Accident Prevention; Accidents; Auto Mechanics; *Bilingual Education; Drafting; Electric Batteries; Electricity; Electronics; Fire Protection; Foundries; Graphic Arts; Guidelines; Hand Tools; *Industrial Arts; Lifting; Machine Tools; Metal Working; Power Technology; *Program Development; *Safety; Safety Education; School Accidents; School Safety; Secondary Education; *Vocational Education; Welding; Woodworking

IDENTIFIERS *Bilingual Materials; Combustion; Soldering

ABSTRACT

Designed for use in bilingual education programs, this industrial arts safety guide presents guidelines for developing a student safety program and three sections of shop safety practices in both English and Chinese. Safety program format, safety committees, safety inspection, and student accident investigation are discussed in the section on developing a student safety program. Set forth in the section on general safety practices are safety instructions for all areas of industrial arts: safety rules for machine tools, hand tools, and portable electric hand tools; housekeeping; back strains and proper lifting; safe lifting; materials handling; personal practices and conduct; and fire control. Safety procedures relating to automotive and power mechanics; compressed gas; drafting room; dusts, fumes, and combustible materials; foundry practices; flammable and combustible liquids; electricity/electronics; graphic arts; soldering; and storage batteries are covered. Specific machines examined in the section on safety procedures for machines include buffers, drill presses, forges, grinders, jointers, lathes, milling machines; planer-surfacers; presses, sanders, saws, metal shapers, shears, sheet metal machines, and welders. (Corresponding bilingual guides containing material in Korean, Thai, Cambodian, Japanese, and Ilokano are available separately through ERIC--see note.) (MN)

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Bilingual Education Resource Series

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Industrial Arts Safety Guide

CHINESE



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EDUCATION & WELFARE
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Olympia, Washington 98504

ED205710

INDUSTRIAL ARTS SAFETY GUIDE

CHINESE VERSION

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Division of Special and Equal Education Programs
Office of Bilingual Education

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INDUSTRIAL ARTS SAFETY GUIDE

安全指南

華盛頓州工業藝術課

學生適用
中文譯本

SEATTLE PUBLIC SCHOOLS

Student Section

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NO TRANSLATION

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NO TRANSLATION

Introduction

意外事件之預防毫無疑問地始自「穴居」時期，當人類第一次發現因不安全情況或缺乏知識而被傷害時，例如：先民發覺火是不合在炕中或潮濕地方蔓延，他們今用棍子從火中移去物品，如他們要操作熱物時大概今用動物皮造的手套，這樣才可免於受燒傷。

自那時間起各種預防在工作環境中受傷的方法都已實施。

近年來研究發現做成意外的原因人為因素比不安全情況更多，意外的發生多是不安全情況加上不安全行動所致，其警覺情況若及知道怎樣會受傷害者大概多不會發生意外。

安全是建立在自律上，安全不能沒有它，不留心或舉動不能防止意外，有道理之知識及簡單的自律可以防止意外。

在任何情況下「安全第一」為最合適的口號，每個目擊過意外的人都知道在任何活動時都要有安全的工作習慣，工作前不思考最做成意外的主因，常常意外的做成是由於不當的操作工具，忽略工具或機器的保養，不用保護方法，和不良或不經心的工作環境。

工業界及政府已儘力的去消除可能令做成危險的情況，其儘力加強機器之安全保養及提供安全的工作環境。

如要預防意外對手中操作的物件要特別小心，在讀完此指南時你今對操作的東西更為熟習及培養出安全的習慣。

記住 — 安全操諸你！

卅長 EVANS 致學生信 S-1.01

你有何損失？ S-1.02

18-7-1 THIS TRANSLATION OF 7/21/78 SUPERSEDES ALL PREVIOUS TRANSLATION

譯文以英文原文為依據

S-1.00



STATE OF WASHINGTON

OFFICE OF THE GOVERNOR

OLYMPIA

DANIEL J. EVANS
GOVERNOR

To the Industrial Arts Student:

As a father, as well as the Governor of the State of Washington, I feel an obligation to write to each of you concerning the importance of safety. The work habits you will be taught in your Industrial Arts class can form the background for safe operation of hand and power tools throughout your life. The need for safety does not stop when you leave the Industrial Arts classroom. It should carry on to your work at home and later, on the job.

It is a waste of the potential of a young life to have a finger, hand or eye lost or mutilated because of a careless act. I hope you will all join me in a dedication to safety in your Industrial Arts classes as well as in the years to come.

Sincerely,

Daniel J. Evans
Governor

DJE:ss

NO TRANSLATION

What have you got to lose?

Your eyes

Watching television
A sunset
A good book
A friend's smile
An attractive person

Your hearing

Laughter of a friend
A bird at your window
A rock concert
The call of your name

Your hands

A game of softball
Buttoning your shirt
Driving a motorcycle
Holding hands with a special person

Your back

Playing on the beach
Getting into your car
A day skiing
Dancing
A comfortable night's sleep

Your legs

A walk on the beach
A game of tennis
Running and hiking
A bicycle ride

Your life

The remainder of today, every tomorrow. The entire rest of your life.

That's what you've got to lose!

NO TRANSLATION

Student Safety Program

Organized safety programs are a good approach to reducing accidents.

There are many types of safety programs. The effectiveness of a good safety program is reflected in the reduction of accidents.

The program on the following pages has suggestions that can be used and/or modified to meet the needs of your school.

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Safety Committee Minutes Form	S-2.02
Safety Inspection Check List	S-2.03
Accident Investigation Report	S-2.04

NO TRANSLATION

S-2.00

SAFETY PROGRAM FORMAT

Organization

Each Industrial Arts class should organize its own safety committee. There should be at least five student members on the committee; two members should be rotated each month. The committee should:

1. Meet every two weeks; more often if the need arises.
2. Review and approve the safety inspection report.
3. Review and discuss all safety recommendations.
4. Study the cause of accidents occurring since the last meeting.
5. Prepare minutes of the meeting and post them on the bulletin board.
6. Maintain a permanent file of accident reports, minutes, and other appropriate materials.
7. Appoint a student safety inspector.

Inspection

Inspection should be made prior to each safety committee meeting. The inspection and written report should reflect the conditions of the area -- housekeeping, fire prevention, first aid equipment, personal protection equipment, unsafe work activities, hazards and guarding needed. Recommendations should be made for corrections.

Education

A bulletin board should be used to alert the class to safe work habits. A member of the committee should post safety materials and minutes of the meetings. Classroom safety meetings should be encouraged with members of the committee participating as leaders.

Accident Reports

Accident reports are an essential part of a good safety program. They help to inform, educate, and remind people of what to look for in regard to accident prevention. They also provide a record of safety items and safety activities.

1. A member of the committee should be assigned to complete accident reports in addition to the instructor's report required by the School District.
2. When a student is injured or is directly responsible for a condition that could cause an injury, that student should be encouraged to cooperate with the committee and attend committee safety meetings.
3. A member of the committee should be assigned to see that action has been taken to prevent a similar accident from taking place in the future.

NO TRANSLATION

SAFETY COMMITTEE MINUTES FORM

Class _____ Date of Meeting _____
Name and Title _____

Period _____ Time Opened _____

Location _____ Time Closed _____

Instructor _____

Members Present:

Order of Business:

1. Review of past recommendations and action taken.
2. Review of accidents since last meeting and suggested corrective measures.
3. Review of inspector's report.
4. Discussion for improvement of the safety program.
5. Selection of chairman and new members for next meeting.

NO TRANSLATION

(Use other side of sheet if necessary)

STUDENT ACCIDENT INVESTIGATION REPORT

Class _____ Period _____ Room _____

Instructor's Name _____

Name of Injured _____ Date & Time _____

Exact Location of Accident _____

Description of Accident* _____

Indicate below with an "X" whether in your opinion accident was caused by one of the following:

PHYSICAL CAUSES

- ☐ Improper protection (personal or equipment)
- ☐ Defective tools or equipment
- ☐ Hazardous arrangement
- ☐ Improper illumination
- ☐ Poor housekeeping
- ☐ Not listed - describe briefly*

PERSONAL CAUSES

- ☐ Physical or mental defect
- ☐ Lack of knowledge or skill
- ☐ Wrong attitude
- ☐ Use of intoxicants or drugs
- ☐ Not listed - describe briefly*

UNSAFE ACTS

- ☐ Working without authority
- ☐ Failure to secure or warn
- ☐ Working at unsafe speed
- ☐ Made safety device inoperative
- ☐ Used unsafe equipment or hands instead of equipment
- ☐ Not listed - describe briefly*

- ☐ Unsafe material handling
- ☐ Took unsafe position
- ☐ Worked on moving equipment
- ☐ Horseplay
- ☐ Did not use safe clothes or personal protective equipment

NOTE: Make certain of names and descriptions of witnesses, injured sent to hospital, condition of injured, assistance by others, etc.

Actions taken to prevent a similar future accident* _____

Date of Report _____ Signature _____

* USE OTHER SIDE OF SHEET IF NECESSARY.

NO TRANSLATION

STUDENT SAFETY INSPECTION CHECK LIST

Class _____ Period _____ Date _____

Hazardous conditions and unsafe acts should be reported so corrective action can be taken. Note also whether potential accident causes, marked "X" on previous inspection, have been corrected.

() indicates Satisfactory

(X) indicates Unsatisfactory

A. FIRE PROTECTION

1. Extinguishing equipment....()
2. Exits, stairs and signs....()
3. Storage of flammable material.....()
4. _____()

B. HOUSEKEEPING

1. Aisles, stairs & floors....()
2. Storage & piling of material.....()
3. Wash & locker rooms.....()
4. Light and ventilation.....()
5. Disposal of waste.....()
6. _____()

C. TOOLS

1. Power tools, wiring.....()
2. Hand tools.....()
3. Use & storage of tools....()
4. _____()

D. PERSONAL PROTECTIVE EQUIPMENT

1. Safety glasses or goggles..()
2. Face shields.....()
3. Gloves.....()
4. Respirators or gas masks...()
5. Protective clothing.....()
6. _____()

E. MATERIAL HANDLING EQUIPMENT

1. Winches.....()
2. Cranes, hoists, booms.....()
3. Carts.....()
4. Cables, ropes, chains, slings.....()
5. Rigging.....()
6. _____()

F. BULLETIN BOARDS

1. Neat and attractive.....()
2. Display changed regularly....()
3. Well illuminated.....()
4. _____()

G. MACHINERY

1. Point of operation guards....()
2. Belts, pulleys, gears, shafts, etc.....()
3. Maintenance & oil leakage....()
4. _____()

H. PRESSURE EQUIPMENT

1. Steam equipment.....()
2. Air compressors.....()
3. Gas cylinders and hoses.....()
4. _____()

I. UNSAFE PRACTICES

1. Improper lifting.....()
2. Improper use of protective equipment.....()
3. Horseplay.....()
4. Running in aisles.....()
5. Improper use of air hoses....()
6. Removing machine guards.....()
7. Work on unguarded machinery..()
8. _____()

J. FIRST AID

1. First aid kits.....
2. Stretchers.....
3. All injuries reported.....
4. _____

K. MISCELLANEOUS

1. Acids and bases.....()
2. New procedures.....()
3. Dusts, fumes, vapors.....()
4. Ladders.....()
5. _____()

SIGNED _____

NO TRANSLATION

USE OTHER SIDE OF SHEET FOR DETAILED COMMENTS & RECOMMENDATIONS

General Safe Practices

Safety rules have been developed to alert you to unsafe practices and conditions. These rules, in some cases, are common to all work. In other instances, they are specific to the particular task at hand.

It is important that you learn these rules and apply them to your Industrial Arts and other activities.

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Safety Rules for Hand Tools.....	S-3.03
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Housekeeping.....	S-3.05
Back Strains and Proper Lifting.....	S-3.06
Safe Lifting Cartoon.....	S-3.07
Materials Handling.....	S-3.08
Personal Practices and Conduct.....	S-3.09
Fire Control.....	S-3.10

NO TRANSLATION

各工業藝術課之安全指示

1. 在有危險性的地方工作或操作機器前必先徵得教師准許。
2. 遇有傷害不論大小要馬上報告教師。
3. 法律規定要帶護眼鏡。
4. 假如你的髮型會防碍工作,你得把它束好或戴上頭罩。
5. 實驗室內要穿著合適的衣服,除去或束緊寬大的衣物,領帶或手飾,捲起衣袖。
6. 遵守有關操作者安全的規則。
7. 與你的班友合作以維護工業藝術之安全計劃。
8. 如學生有不安全之行動時得提醒他/她。
9. 如有任何儀器可能不能操作時得先報告教師。
10. 把工具和材料放在離枱角遠的地方。
11. 用掃去清理屑碎,用布去清理油漬的地方。
12. 保持地板和桌面清潔無雜物。
13. 有任何液体瀉在地上時得馬上抹乾淨。
14. 確知抽屜和門都關好。
15. 將油布及其他易燃材料放在認許之金屬罐內。
16. 操作大,重或毒的材料時得小心。

動力工具之安全規則

1. 在未有正式指示,不明白如何操作及教師未有准許時不要操作機器.
2. 在眼睛可能受到傷害的地方要戴合適的護眼鏡.
3. 請教師檢查你的工作裝置.
4. 在加上動力前要檢查及調整裝置.
5. 在開動前確知附近無人.
6. 護塞要在定位上及正常運轉.
7. 開關機器後不要離去,要待其完全停止為止.
8. 除非需要一幫手否則只需一人操作機器.
9. 要守著一運轉中的機器.
10. 在加油或清潔時要斷電.
11. 你的手,刀片,切刀及可轉動的零件要保持安全距離,手指不要擺在有被切刀切到危險的地方.
12. 不要放工具器械或其他物品在機器內.
13. 保持機器四週的地面清潔無液体屑片,工具和其他材料.
14. 當你操作機器時要全神貫注,不能分心.
15. 永不要靠在機器上.
16. 不要用駁線作永久接電.
17. 當機器有破裂或失效時通知教師.
18. 當除去工藝品及裝置新機器前,待機器完全停止.

SAFETY RULES FOR HAND TOOLS

手作工具之安全規則

1. 在眼睛可能受到傷害的地方要帶合適的護眼鏡。
2. 選擇適合大小和種類的工具,學習循序運用每一工具。
3. 切割工具一定要好好地磨利和保持好的情況。
4. 不要讓手沾及油漬。
5. 小心運用利邊或尖銳之工具,小心保護你自己或其他人。
6. 用鉗具拿穩短少之物。
7. 永不要放工具在口袋內。
8. 用工具時要因材而用。
9. 不用鬆弦或破裂手柄之工具。
10. 冲孔机和鑿子要妥為保存,銳口令做成傷害。
11. 只用有柄之銼子。
12. 不用銼子錘打以免破碎。
13. 不要以螺絲旋作挖手棒。
14. 不要投机取巧以免做成傷害,所有扭轉器都因其大小力量比例而施用。
15. 不要用一硬錘打在另一硬面上。
16. 用完一工具後要清理好放回正當的保存地方。
17. 有破裂或失效時要通知教師。

S-3.03

SAFETY RULES FOR PORTABLE ELECTRIC HAND TOOLS

手提電動工作工具安全規則

1. 用手提電動工作工具前一定要有教師的准許。
2. 插電前確知開關制是否在“off”字位置上。
3. 操作任何手提電動工具時一定要帶護眼鏡。
4. 每一裝置的柄上的開關一定要保持不變的(死人型)壓力, 那就是當鬆掉壓力後便關去壓力。
5. 確知裝置已穩固好, 不要裝在濕的地方。
6. 不要穿著鬆大或籠型的衣服, 鬆動中的零件可能會捲到它。
7. 在開動前確知你已站穩, 工作間的四周沒有碍物。
8. 駁線應常檢查看看有無缺裂。
9. 操作手提電動工具時過量的壓力會損害工具和做成意外。
10. 用工具前所有材料應適當地裝好。
11. 在開始前應檢查護塞, 看看它們是否運轉正常。

HOUSEKEEPING

Good housekeeping is a key item in accident prevention. It takes the cooperation of all; it can't be the responsibility of the instructor and custodian alone.

An effective housekeeping program will:

1. Reduce exposures to slips and falls;
2. Reduce fire hazards;
3. Remind individuals of their responsibilities in keeping the laboratory clean and orderly;
4. Organize the housekeeping effort so that everyone assumes their fair share of the task.

Good housekeeping cannot be accomplished by an occasional grand cleanup. A program must be developed for continual cleanup. The following are essential in a good housekeeping program:

1. The equipment is arranged to permit safe and efficient work practices;
2. Materials and supplies are neatly and safely stacked;
3. Sufficient waste containers are provided and used;
4. Floors are clean;
5. Combustible materials are properly disposed of or stored in approved containers;
6. Excess materials and debris are not allowed to remain on benches and in the work areas;
7. Regular inspections are made to maintain clean and orderly conditions.

Items that are necessary for good housekeeping in an Industrial Arts laboratory are:

1. Adequate dust collecting system;
2. Suitable containers for scraps, shavings, chips and other waste material;
3. Adequate storage rooms, shelves, racks, and cabinets for materials and supplies;
4. Splash guards and collecting pans for all machines using oil and coolants;
5. Brooms, bench brushes, shop towels, and other cleaning

IT IS YOUR RESPONSIBILITY TO SEE THAT HOUSEKEEPING
AND SUPPLIES ARE PROPERLY USED.

NO TRANSLATION
MENT

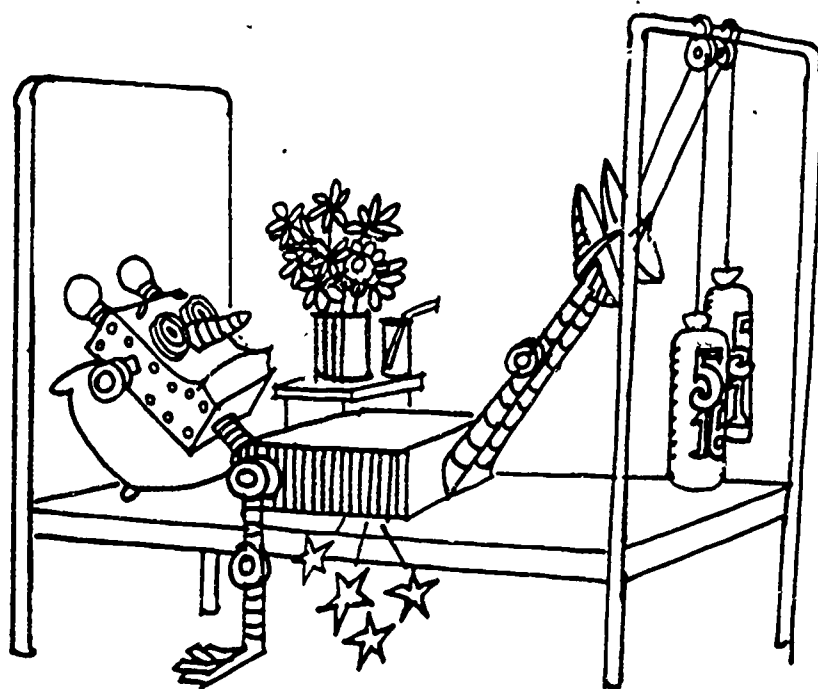
BACK STRAINS AND PROPER LIFTING

背痛和起重

由不當的起重做成的背痛,其所浪費的工作時間多於其他任何一類的傷害。

人力操作材料所做成的意外多為不良工作習慣所做成——如不當的起重,攜帶過重的物件,不對的握法,及沒有穿著護身的裝備。

在任何安全計劃內正當的起重方法訓練是強迫性的。好的起重訓練可以防止很多背傷。



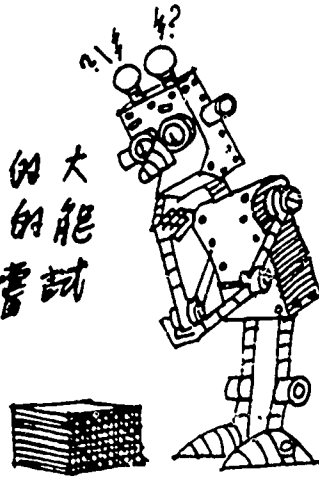
不當的起重會終身傷害你。讀下頁學習正當的起重法。

安全起重法

Safe Lifting

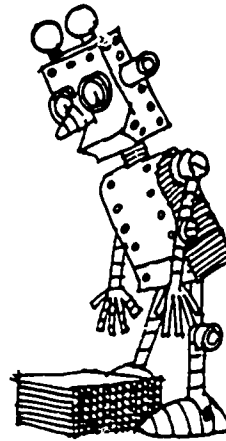
1

量度一下物件的大小,如你對自己的能力有疑問,不要嘗試去提起它。



2

確定你已站穩,一腿可以前伸以保持平衡。



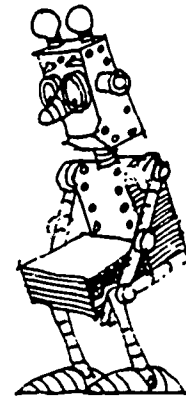
3

彎曲雙膝作蹲踞,維持背部愈直愈好,散開和下垂雙膝,靠近物件。



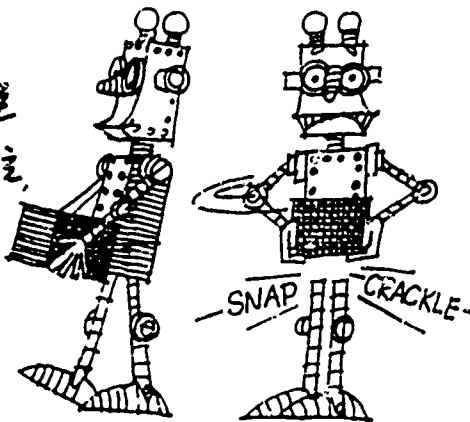
4

現開始用腿提起,維持物品靠近身體。



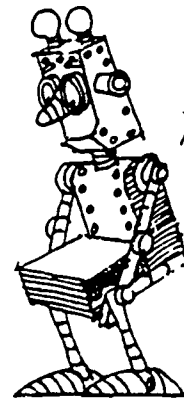
5

提起物品至可攜帶部位,不要搓曲身體,用步移法轉身。



6

在把物品放下時,彎曲雙膝,保持背部平直,以物靠身,用臂力和腿力放下物品。



MATERIALS HANDLING

According to the National Safety Council, nearly one in four disabling injuries is directly related to materials handling activities. These accidents include such things as slips and falls while carrying objects, back injuries and hernias from improper lifting practices, chemical and heat burns from failure to use protective clothing or equipment, and mashed or amputated fingers or toes from dropped objects.

Some of the things you can do to reduce the chance of injury to yourself or others when handling materials are:

1. Use the proper aids to handle the materials, such as tongs for hot materials, block and tackle or jacks to lift extra heavy items, and blocks or wedges to keep items from rolling.
2. Don't try to lift heavy objects without help; before you lift make clear who is giving the orders.
3. Use proper lifting techniques (see Page S-3.07).
4. If the material is heavy or sharp use gloves or pads to assure a better grip or to avoid cuts. Be careful of splinters when handling lumber; wear gloves to handle rough lumber.
5. Before you pick up an object be sure that the path you intend to follow is clear.
6. With heavy objects, make a "first lift" before carrying it so that you can get the feel and position.
7. With long objects, such as pipe or ladders, have someone at each end so that they can be safely guided.
8. Be careful not to drop or set heavy objects on your feet or those of other people.
9. Stack materials so that there is no danger of slipping or falling during storage or removal.

NO TRANSLATION

PERSONAL PRACTICES AND CONDUCT

Accident prevention is up to you. There are certain basic rules of conduct that you should incorporate in your daily activities. These rules all involve your attitude toward your fellow worker as well as your attitude toward the task at hand. People with a poor job attitude are those that most frequently have accidents.

Orderliness is a desirable quality. Safe workers will have a methodical approach to the job. They will lay out tools neatly so that they are able to approach the project in an orderly manner. They will not clutter up their work area with excessive tools and materials.

A safe worker is a clean worker. Messy jobs require continual cleanup of the work area and frequently of the worker.

Horseplay in the laboratory will not be tolerated. Severe accidents often have occurred because individuals:

1. Threw items in the laboratory;
2. Ran in the laboratory;
3. Lacked consideration for others;
4. Directed compressed air toward others;
5. Played tricks on others -- hot metal, electrical shock, glue in pockets, etc.;
6. Did not adhere to the accepted safe practices of a laboratory environment.

NO TRANSLATION

FIRE CONTROL

The fighting of fires is normally left to professional fire fighters such as the local fire department, but the student should know how to extinguish fires.

Serious fires may occur in the Industrial Arts laboratory in spite of the efforts of everyone. Should this happen, the procedure will be:

1. Sound the alarm, both locally and to the fire department.
2. If a person's clothing is on fire, extinguish it. Water is most effective. Do not let a person with burning clothing run. (Melted, synthetic clothing can give serious burns if extinguished by rolling on the floor or using a blanket.)
3. Evacuate to a safe spot clear of the fire area and remain in a group so it will be easy to check for missing persons.
4. When the fire has been extinguished, clean up and protect wet or damaged equipment and materials. Be alert for rekindling of the fire.

Fires and Extinguishers

There are four principal classes of fires. No one extinguishing agent works well on all, although some work on most.

Class A: This is the most frequently found fire involving wood, paper, rubber and most plastics. Use water, chemical extinguishing solutions containing water, or Class A dry chemical (they crust and smother the glowing embers).

Class B: Flammable liquids are commonly used in the Industrial Arts laboratory and can be difficult to extinguish. Dry chemicals are most effective, followed by foam, inert gas, and water spray. A flammable liquid fire in a container can be extinguished by putting a lid on the container. Remember that the heat from a flammable liquid fire can quickly ignite wood or paper in the vicinity, making extinguishment more difficult.

Class C: This covers electrical fires. Remember that the first step in extinguishing an electrical fire is shutting off the power to the equipment that is on fire. Then extinguishers with a Class C rating may be used to complete extinguishment. It may be necessary to use water if the electrical fire has involved other combustible materials. AVOID USING WATER ON ELECTRICAL EQUIPMENT THAT IS NOT DE-ENERGIZED UNLESS IT IS APPLIED AS A FINE SPRAY, AND EVEN THEN CAUTION MUST BE TAKEN TO AVOID ELECTRICAL SHOCK FROM TOUCHING "LIVE" SURFACES.

Class D: Certain metals such as magnesium and aluminum may burn intensely. In general the extinguishing procedure involves excluding air and moisture with dry sand or metal fire extinguishing powder.

NO TRANSLATION

Safety Practices...Specific Processes and Operations

In spite of one's knowledge of general safety, alertness to potential hazards, or desire to "be safe", there are certain processes and operations that require specific knowledge in order to avoid injury.

Safety rules for specific areas are as follows:

Automotive and Power Mechanics.....	S-4.01
Compressed Gas.....	S-4.04
Drafting Room Safety Practices.....	S-4.05
Dusts, Fumes & Combustible Metals.....	S-4.06
Electricity/Electronics.....	S-4.07
Flammable & Combustible Liquids.....	S-4.08
Foundry Safe Practices.....	S-4.10
Graphic Arts.....	S-4.11
Plastics.....	S-4.15
Soldering.....	S-4.16
Storage Batteries.....	S-4.17

Note to Teacher and Students: This guide is not intended to provide all of the instructional and safe practices information that students will need to know to successfully and safely participate in their Industrial Arts activities. Each instructor and student is expected to seek out and use additional instructional material. Highly technical information not available in the average text should be obtained by contacting specialists in the field.

Additional information on safety and hygiene may be obtained from:

Department of Labor and Industries
Division of Industrial Safety and Health
*P. O. Box 207, Olympia, Washington 98507

United States Department of Labor
Federal Office Building, Room 6048
909 First Avenue
Seattle, Washington 98174

University of Washington
Department of Environmental Health
Health Sciences Building
Seattle, Washington 98105

*Or the office of Labor and Industries
nearest your school.

NO TRANSLATION

自動和動力機械 AUTOMOTIVE AND POWER MECHANICS

在修理自動機械的工業中「安全」不能過於強調。一個好的機械師就是一個安全的機械師。假如有一快捷或安全的工作方法，要用安全的方法。否則，你可能會不能完成工作。

以下是一些你可能遇見的損壞和安全措施。

普通預防措施 General Precautions

1. 只有准許時才油滑或調整正轉動中零件。
2. 當在風扇或帶附近工作時要小心。
3. 可能時，工作時機器開關要在「停止」"OFF"位置上。
4. 只在機器停止時才束緊風扇帶。
5. 當考慮機器和熄滅系統是熱的 "HOT"。
6. 不要用開口容器傾倒汽油於引擎機內。
7. 在熔焊機械時要特別小心——提供防火設備。
8. 不要直接在其他學生上工作。
9. 在打開蓋子前等放熱器冷卻才好。
10. 當操作機器時確知覆蓋已穩當地打開在正確位置上。
11. 當要拉機器時確知繩索都已適當地綁好。

個人健康之危險性 Personal Health Hazards

1. 當噴漆時要戴口罩。
2. 不要以漆油或汽油洗車。這些原料為爆炸性且會傷害皮膚。
3. 當必要從機器中提起零件時避免背部受傷。
4. 永不要把手放在高壓油射槍前。
5. 得受傷的地方穿著和蓋好。
6. 不要穿寬衣或面長髮。

18-7-1 THIS TRANSLATION OF 7/21/78 SUPERSEDES ALL PREVIOUS TRANSLATION

譯文以英文原文為依據

S-4.01

千斤頂和起重機 Jacking and Hoisting

1. 假如有學生在下面不要升起車輛。
2. 在汽車下工作時一定不要用千斤頂。
3. 當用千斤頂時避免過度的搖擺車輛。
4. 在學生開始在汽車下工作前要先檢查千斤頂。
5. 長形的千斤頂柄會做成危險，應先拖其拿走。
6. 不要用槓檔千斤頂。
7. 當汽車已升起時不要發動機器。
8. 放下汽車時要小心。

工作時駕駛及倚位 Driving and Locating the Vehicle for Work

1. 在工廠中駕駛汽車時不要戴有限制視線的護目鏡。
2. 汽車只應由有有效駕駛執照的學生駕駛並要有教師之准許。
3. 修理汽車時不應把車位在繁忙的通道或公眾通道上。
4. 拖和推車只能在教師准許時才能。
5. 當要把車停在擁塞地方時要有另一學生作引導。
6. 當引擎發動時，一定要有人坐在駕駛座上。

油漬、油、燃料及溶液 Greases, Oils, Fuels and Solvents

1. 身上清理和通風溢出燃料。
2. 只用准許的溶液去清理零件，不要用汽油。
3. 在發動引擎前確知有正當的通風設備。
4. 將油漬的碎布放進准許的廢物箱內。
5. 發動引擎前檢查燃料接點有無漏油孔。
6. 將易燃液體放在准許的密封容器內。

氣壓 Air Pressure

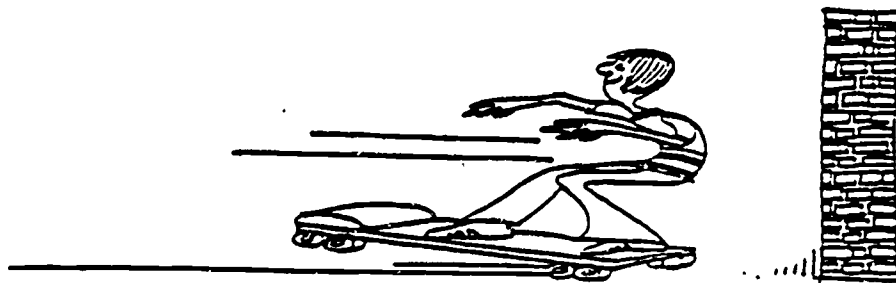
1. 當輪胎充氣時用空氣計量器。
2. 當充氣於有 "SNAP RING" 的卡車輪胎時，應把輪胎定位於一許可以範圍內。
3. 永不要把氣喉對着別的学生或你本人。

螺旋鉗和工具 Wrenches and Tools

1. 保存所有工具清潔和免於油漬。
2. 搬起地板上之工具。
3. 確知螺旋鉗已裝妥。
4. 鬆柄的錘子不應使用。
5. 所用的工具要符合其設計使用 —— 永不要用夾作槓桿。
6. 在不用時要把鐵鉤放在掛架上。
7. 不要用齒形頭的鑿子。

一氧化碳 Carbon Monoxide

一氧化碳為一有毒之氣體，其形成原因為汽油或其他燃料沒有完全燃燒。當引擎發動時其為氣體狀，雖然是一小量的一氧化碳在人身內都會造成致命傷。這就是為什麼那麼重要不要在很差的通風地方發動引擎。



壓縮氣體 COMPRESSED GAS

最常用來切割和熔焊的氣體為氧氣和乙炔，但是你亦可能令用氫氣、氮氣、Maap 氣、氫氣、二氧二氣代甲烷、氧、丙烷（液化汽油）、二氧化碳或二硫化硫。如要安全地使用這些氣體，你要知道它們的特性和確知你用正確的瓶子。壓縮氣體的瓶子沒有特別的顏色記號！要閱讀標記。以最謹慎態度使用壓縮氣管，在每個管中有無比之威力。粗心的使用結果使到管子或管破碎而使你或你的朋友馬上喪命。移動圓筒時使用手推車或輪子。

易燃氣體 Flammable Gases

乙炔、氧、丙烷和 Maap 氣都是高度易燃氣體。這些易燃氣體通常都用圓筒裝置。乙炔在丙酮中溶化（Maap 氣和丙烷都在壓力下溶化），所以在用這些氣體時要特別注意把圓筒放直。如與空氣或氧混合，它們會形成強力的爆炸，所以汽門調節器、喉管和其他裝備一定要緊密和好好地修理，當不用時關閉調節器和汽門！將後備的氣筒放在一通風位置，用防火欄將其隔開——最好在外面。所有的氣筒一定要常放好和垂直地放，當存放或移動時，管筒的蓋子一定要定位，除非已穩放在輪車上學生不得移動筒管。

氧氣 Oxygen

為了工場用途，此氧氣自成一組，它令與很多的普通材料混合，在正確的情況時它令使材料猛烈地燃燒及爆炸。在高壓時可令使汽油爆炸。永不要用油放在氧汽門或調節氣爐上。假如你換圓筒，在打門汽門前常請教師檢查。

非燃氣體 Non-Flammable Gases

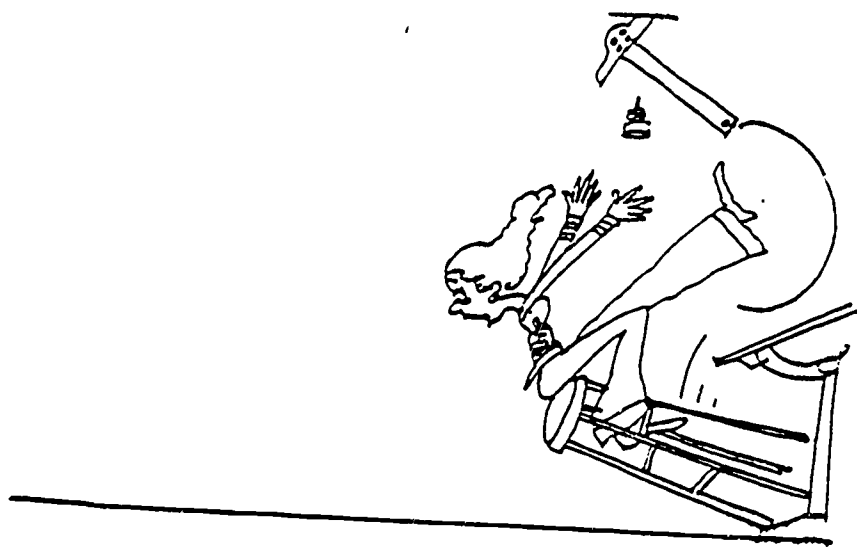
這些氣體包括氧氣、氫、二氧二氣代甲烷、氧、二硫化硫，和在高壓情況下，氧可令燃燒，有些氣體無味，有些有強味（二硫化硫氣）。這些氣體對生命都至重要，所以適當的通風設備最重要。在開始使用氣體時，先閱讀其特色及詳細安全預防措施，及與你的教師商討此氣體之特性。

製圖室安全練習

DRAFTING ROOM
SAFETY PRACTICES

雖然製圖室存在之危險性比較少，但以下之安全因素一定要顧慮到：

1. 製圖室中之切紙刀可能會帶來嚴重的割傷或夾傷。大部份時間應要裝在固定的位置上，不用時，把它鎖好，切刀之保護柵不應離桌子邊緣以上，及定位在操作者之手部及刀鋒中間，不要移去護蓋。
2. Ozalid 印紙和沖印紙，因要用氯，所以要特別注意安全指示。在氯在凝結狀燃燒時很毒，其只能在通風的地方操作。應告訴學生不要吸入氯氣，如氯散落在皮膚上，應馬上用肥皂或清水洗淨。
3. 不正當之操作羅盤、分切器、或硬鉛筆結果會使皮膚受傷，及由眼睛受傷引致血液中毒。
4. 確和你坐的椅子或几子四腳着地，從移動中的椅子或几子跌下做或製圖室中主要的受傷問題。
5. 小心調整可調整的椅頂。



塵埃、氣體和易燃金屬 DUSTS, FUMES AND COMBUSTIBLE METALS

在工藝實驗室中，有些人會對塵埃或氣體（燃燒金屬產生之碎粒）感到不適。有些碎粒富有高度易燃性或爆炸性，其可能導致嚴重的或永久性疾病。

以下之四點為重要的防止室內爆炸之方法：

1. 用通風設備移去工作地點之塵埃。
2. 所產生之塵埃用吸塵機或掃帚移去。
3. 當在含產生塵埃之操作時戴防護呼吸器。
4. 在剝切、熔焊或磨鍍鋅金屬前請教教師。

石棉塵很有危險性。當剝切或打孔或磨作時要特別小心。當操作此類金屬材料時一定要穿戴呼吸器或護衣。

有些金屬如鎂等都是易燃的或不穩定的，不應用於工藝實驗室中。

當操作鋁或鋅時，不論是否燃燒、銲接、熔接、溶化，或拋磨，一定要有通風設備。



電力和電子 ELECTRICITY/ELECTRONICS

1. 鏡擊為容化的焊。顧慮到所有的電線或插頭都是通
2. 目輕判定。要顧慮到所有的電線或插頭都是通
3. 護要不非法。要顧慮到所有的電線或插頭都是通
4. 通未方。要顧慮到所有的電線或插頭都是通
5. 合時驗。要顧慮到所有的電線或插頭都是通
6. 戴時測。要顧慮到所有的電線或插頭都是通
7. 要分全。要顧慮到所有的電線或插頭都是通
8. 時或全。要顧慮到所有的電線或插頭都是通
9. 接或以熱。要顧慮到所有的電線或插頭都是通
10. 鐸鐸主和。要顧慮到所有的電線或插頭都是通
11. 當當直電。要顧慮到所有的電線或插頭都是通
12. 不換。要顧慮到所有的電線或插頭都是通
13. 當當實。要顧慮到所有的電線或插頭都是通
14. 只在。要顧慮到所有的電線或插頭都是通
15. 確不。要顧慮到所有的電線或插頭都是通
16. 高在。要顧慮到所有的電線或插頭都是通
17. 當當。要顧慮到所有的電線或插頭都是通
18. 當當。要顧慮到所有的電線或插頭都是通

容易起火和燃燒之液体 FLAMMABLE AND COMBUSTIBLE LIQUIDS

在很多工藝課中易起火和燃燒之液体是很重要的。它們一定要有高度的安全性去存放或用。

在用這些原料前常閱讀容器上之指標說明。

容易起火和燃燒液体有潛在之危險性因為：

1. 很多比空氣為重之蒸氣體聚落地板上或較低角落上，等待散落的火花。
2. 很多已經氧化發熱，所以如廢物與其接觸便令隨之着火。
3. 全有傷害性結果之蒸氣令做人體內之神經和/或排洩系統之傷害。
4. 假如呼吸入體內全部都有害。
5. 大部份毒氣令移去皮膚上之保護油，常接觸之結果令做成皮膚炎。
6. 幾半全部都令猛烈燃燒，有適合之滅火儀器很難撲滅。
7. 當燃燒時，大部份的易燃液体都令產生濃煙使你在能救火前要堅守室內。

要很安全地存放和操作容易起火和燃燒之液体

1. 確知瓦斯抽風機/扇在易燃液体存藏室內運轉。
2. 三拿足夠當課所需用之份量。
3. 遵照教師指示將廢物或多餘材料放在有蓋之容器內。
4. 用漏斗倒液体入小的量器內。
5. 馬上清理灑水和水滴，遵照指示處理布碎和廢料。
6. 閱讀和遵照指示操作和混合推化劑時用樹脂。
7. 永不要將推化劑倒回瓶中。
8. 永不要將推化劑倒在樹脂中，不要將樹脂倒在推化劑中。
9. 永不要將樹脂、油漆或其他完成原料用在割切、熔焊、機磨或其他熱的工作地。
10. 確知工作間通風良好。
11. 將溶劑或漆料放在原裝容器或准許之罐內。
12. 當操作 epoxy 和 polyester 樹脂時戴膠手套減少皮膚受傷。
13. 在離開工作間時洗手及其他觸及之皮膚。

以下是一些有更大危險性的易燃液体, 係在實驗中活動中遇到的。(按危險性大小順序排列如下):

- Starting fluid 引燃液
- **Aerosol cans 氣態溶膠
- Gasoline 汽油
- *Catalysts M.E.K. Peroxide 催化劑
- Carburetor Cleaner 汽化器清潔劑
- Acetone 丙酮
- Lacquer and lacquer thinner 漆
- Adhering liquid (for skin-screen process) 黏液
- Paint thinner 油漆溶劑
- Alcohol 酒精
- Shellac 亮漆
- *Japan dryer 乾劑
- Kerosene 煤油
- Paint 油漆
- Resin (polyester) 樹脂
- Stain and varnish 染劑
- Danish oil 丹麥油.

* 當與有機原料混合時這些原料會加速燃燒或猛烈反應。

** 視罐中所用之化學推進劑其傷害危險性可能會有極大不同。

鑄造工場之安全練習

FOUNDRY SAFE PRACTICES

鑄造工場所內要常時遵守安全練習。不正確之操作溶化的金屬會做成嚴重的三級燒傷。穿著保護衣服，如安全眼鏡面罩，頭盔，圍巾，護脛，和常物起模前確知該液等監督間之通風扇。

1. 當和常物起模前確知該液等監督間之通風扇。

2. 將如在教師工作間空氣流通二分鍾。

3. a. 打開火爐，減少空氣對流。

4. b. 在火爐內裝一火炬。

5. c. 慢加油，如熄火再用(a)法再真爐。

6. f. 慢加強空氣使燃燒於爐內。

7. g. 調整火量使其燃於爐內。

8. 在移送溶化金屬時儘量接近地板用二人傾倒器。

9. 除減火砂外，隔離木或器物於鑄造工場外。

10. 鑄送工場之地板應用砂保護着以防意外性由溶化金掉灑於地上所引起之爆炸。

11. 在鑄件時煙(STYROFOAM)，注滿鑄型口盤以防着火；打開工場之通風扇，不要在吸入煙或二氧化硫殼倒模時，模型之兩邊應裝穩，及以細頸瓶之青砂散熱，不要吸入煙霧。

圖藝

GRAPHIC ARTS

有很多在圖藝科所用的器材和原料都是重的、尖的、脆的、或難以操作的。測量一下勞作物之大小。然後如有需要請別人幫助。認清器材之附有之精細特性，不要弄損壞它。

以下是幾點圖藝間之安全顧慮。

暗房 Dark Room

1. 在暗房時打開通風器。
2. 化學品不應存放在玻璃瓶或高架上因其可能墜下做成傷害。
3. 當準備化學溶液時要戴化學護目鏡和圍巾。當將酸倒入水中，不要將水倒入酸中。
4. 當沖底片或混合化學品時要戴膠手套和鉗子。
5. 當沖底片或混合化學品時有敏感性的學生一定要帶手套。
6. 在暗房工作時學生手部要離開面部。
7. 沖完底片後學生應小心洗手。
8. 在接近汽盤附近不應用手提式電器。
9. 在暗房內不得有不安全之行為。
10. 在馬上抹乾灑水。
11. 避免化學品沾在衣服上。這可能會做成皮膚不舒服。

乾框 (盪架) Dry Mount

1. 學生應要小心避免被盪斗燒傷。
2. 乾框的熱度已由教師調定。
3. 工作完成後拔去盪斗之插頭。
4. 不要將熱的盪斗放在紙上或櫃台上，但要把它放回原架上。
5. 將坏的電線和插頭告訴教師。
6. 不要用手去試盪斗之熱度。

操作攝影機 Process Camera

1. 不要觸摸熱燈。
2. 避免用攝光燈對着學生眼睛。
3. 在玻璃複印板附近小心操作。

凸板印刷 Offset Press

1. 在調整、清理、加油和清理積物前先把印機停止。
2. 在操作時不要伸手過印機。
3. 當發現印機機件失靈時應把它關掉。繼續操作前告訴教師。不要嘗試去修理。
4. 操作印機的速度要遵照教師的指示。
5. 清理轉動中之印機要特別小心。
6. 沒有教師之准許不得在印機上用工具。
7. 確知印刷時穿着衣服對工作安全很重要。除去寬衣、領帶、或手飾。把衣袖捲至手肘上。
8. 假如你的頭髮可能令帶來危險性，你一定要把它束好，或戴護髮器。
9. 常保持地板整潔。

切板 (STRIPPING TABLE)

1. 所有材料不要接近玻璃因此不會打破。
2. 當切平物時手指離開切板地方。
3. 割切工具應妥善存放及保持銳利。

摺紙機 Folding Machine

1. 當機器在轉動時不要嘗試去移走填塞的紙。
2. 更改時停頓電源。
3. 將所有工具移開摺紙機格外。
4. 確知電綫已被拔去。

切紙機 Paper Cutter

1. 切刀只能由教師更換。
2. 除要被切的紙外任何東西都不要放在切格上。
3. 保持切格附近地板清潔。把切碎片放在廢紙箱中。
4. 在整個切紙過程中將雙手放在槓桿上。在雙手離開槓桿前確知切刀在上位正確。
5. 永不要將鉗子提高過刀片。

製板器 Plate Maker

1. 在更換碳紙或調整前停止製板器。小心熱的碳紙。
2. 操作時不要看圓光。
3. 小心不要把空心架的玻璃打破。

紙孔機 Paper Drill

1. 提防打孔尖端是熱的。
2. 當打孔時將手離開打孔部位。
3. 常保持腳下乾淨。

空氣掃 Air Brush

1. 請教師搖動或停止高壓綫的調整器。
2. 不要調整調整器。
3. 小心不要噴在學生臉上。

符號印刷 Sign Press

1. 不要擲或投活字型。
2. 小心把手離開滾筒。
3. 只用特別之清潔劑去清理活字和印机。
4. 當清理時不提帶印机。

压印机 Platen Press

1. 當槓桿放下時將手離開压印机。
2. 在印刷時不要取出或調整紙章。
3. 遵照指示清理压印油墨和滾筒。

刻印 Engraving

1. 當刻印時一定要戴手套。
2. 不要將手放在切刀之下。
3. 教師令更換或調整刻印切刀。

自動溫度紀錄器 Thermography

1. 當燃燒凸板印粉時學生一定要帶手套。
2. 學生在工作間不視熱力灯。
3. 在灯亮或凸板印粉在燃燒時不離開工作間。

塑膠印和金印 Rubber Stamp and Gold Stamping

1. 用燃燒原料時要小心操作。
2. 保持工作面清潔。
3. 不要擲或掉活字。

1. 戴合適的護眼鏡。
2. 除非你已明白混合物之反應，永不要混合任何東西。
3. 因可能散出毒蒸氣，要用通風設備。
4. 很多溶劑和樹脂會產生很低閃光點之濃縮蒸氣，在操作此類原料時不得用陽火燃燒。
5. 穿戴合適之保護物，防止原料引起之皮膚不適——如穿戴手套和面罩等。
6. 當操作熱的塑膠時，戴保護手套。
7. 當操作纖維玻璃或拿他種原料時，戴面罩和呼吸器。
8. 當將低閃光點之原料放在冰箱中。
9. 當將低閃光點之原料放在機械時，將所有護蓋定位。
10. 當每個燃燒單位都有警告符號和保護。
11. 只用教師提議之原料及遵照這些機器之安全規定。
12. 當用木或放金屬所製之工具時，要正確地放置所有易燃原料。
13. 當清理和推化時，要正確地放置所有易燃原料。
14. 當清理和推化時，要正確地放置所有易燃原料。
15. 當清理和推化時，要正確地放置所有易燃原料。

鐸接 SOLDERING

鐸接：用一鍍化金屬連接兩樣金屬在一起的过程。甚全燒傷你自己或他人。你應記牢以下之安全措施：

1. 戴合適的護眼鏡。
2. 在開始點燃鐸接爐前，確知煤氣已開妥。
3. 假如火爐沒有自動燈：
 - a. 以火柴或燈看之紙放入爐中。
 - b. 燈已打開煤氣直至其燃燒。
 - c. 調整火夾使其在爐內燃燒。
4. 在有良好通風設備下工作。
5. 不要在鐸接過程中吸入煙霧。
6. 小心地從銅上移去多餘之鍍化鍍。
7. 馬上清理灑落之鍍化物。
8. 鐸接後洗手。鍍化物會燒傷皮膚或損害衣物。
9. 如被酸燒傷馬上用水沖洗。
10. 小心防止薄的金屬的迅速傳熱。
11. 不要站在或坐在工作間內用電槍或鐵器。
12. 不用電桿槍和鐵器時小心不要切斷或燒着電線。
13. 清理工作間。
14. 不要在有他人會接觸下時留下熱的金屬。

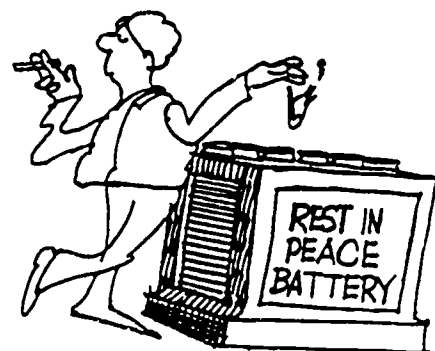
你最可能接觸到儲藏之電池為汽車電池。因其大之體積及其普通性，有時我們會在用電池時起於不小心。

以下是安全顧慮之規則

1. 電池之儲藏或充電只能在有良好通風設備下行之。不要吸入電池之酸氣。
2. 任何引起燃燒的原因都要遠離電池之儲藏地方；即是：不准吸煙，不准用火柴，不用工具相擊產生火花。
3. 在解電或充電時不要操作電池。
4. 當處理電池時要穿著合適之保護衣服如膠手套，面罩，圍巾等。
5. 在電池附近不應帶金屬飾物，如戒指，手鐲，或頸鍊。
6. 在電池充電間內有水花濺和洗眼盤。
7. 用微約之氨液，或碳酸鹼液，或馬上用水可以中和洒落酸液。
8. 只在充電器已關妥及蓋好時才能接駁或除去電池充電器。

以下是一樣較嚴重之潛在危險：

1. 不適當接電引起爆炸。
2. 不對之處理會使酸液洒落。
3. 不適當之提升物件會傷背部。



Safety Practices ... Machines

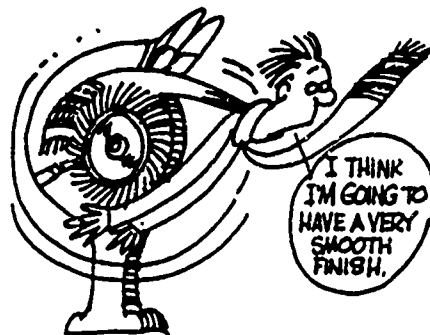
Safety rules for the following machines are included in this section.

Buffer.....	S-5.01
Drill Press.....	S-5.03
Forge, Gas.....	S-5.05
Grinder.....	S-5.07
Jointer.....	S-5.09
Lathe, Metal.....	S-5.11
Lathe, Wood.....	S-5.13
Milling Machine.....	S-5.15
Planer-Surfacer.....	S-5.17
Press, Offset Printing.....	S-5.19
Sander, Portable Belt.....	S-5.21
Saw, Band.....	S-5.23
Saw, Portable Circular.....	S-5.25
Saw, Radial Arm.....	S-5.27
Saw, Scroll.....	S-5.29
Saw, Table.....	S-5.31
Shaper, Metal.....	S-5.33
Shear, Metal Squaring.....	S-5.35
Sheet Metal Machines.....	S-5.37
Welder, Arc.....	S-5.39
Welder, Oxy-Acetylene.....	S-5.41

NO TRANSLATION

OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Buffer



SAFETY SUGGESTIONS

1. Always buff using the lower half of the wheel (below center).
2. Always wear eye protection when buffing.
3. Always stand to one side of the wheel when buffing and when applying compound.
4. Never use a rag to hold the work while you are buffing.
5. Use extra caution when buffing around corners, openings or areas where the wheel could grab and throw the work. Do not buff small diameter tubing, wires, chain or similar material.
6. Exercise caution so that the work does not overheat and burn your hands.
7. Be sure the area behind the buffer is open and that no one else is in the safety zone.
8. If your hairstyle presents a potential hazard, you must fasten it securely or wear a protective hair cover.
9. Remove or fasten any loose clothing, neckties or jewelry. Roll loose sleeves to the elbow.

Chinese Version

磨輪 BUFFER

未得教師允許前不得操作此機器

1. 磨光時常用磨輪之下半部(中心以下)。
2. 磨光時常戴護眼。
3. 磨光或加入混合物時常站在磨輪之旁。
4. 磨棒時不要用碎布去拿被磨物。
5. 在磨角或其他有空隙的地方時特別小心，因為輪子可能勾捲曲磨物，所以不要磨細小圓圓之鐵條、鎖鏈或其他類似物品。
6. 小心操作以防磨物過熱燙傷手。
7. 要確知磨輪後面無人站在安全區內。
8. 如果你的頭髮妨礙操作可能發生意外，要把它束好或戴護髮。
9. 除去或束緊寬大衣服、領帶或珠寶，將寬大袖捲起。

18-7

THIS TRANSLATION OF 6/26/78 SUPERSEDES ALL
PREVIOUS TRANSLATIONS

譯文以英文原文為依據

S-5.01

BUFFER

Student Name _____
 Class _____
 Date _____ Grade _____

SAFETY QUIZ

- | | | |
|--|---|---|
| 1. A rag should be used to hold hot objects while buffing. | T | F |
| 2. Always buff on the lower half of the wheel. | T | F |
| 3. Loose clothing or hair must be confined. | T | F |
| 4. Goggles <u>must</u> be worn when buffing. | T | F |
| 5. Use extra caution when buffing corners or confined areas of the work. | T | F |

磨輪 BUFFER

學生姓名 _____
 班級 _____
 日期 _____ 成績 _____

安全測驗 SAFETY QUIZ

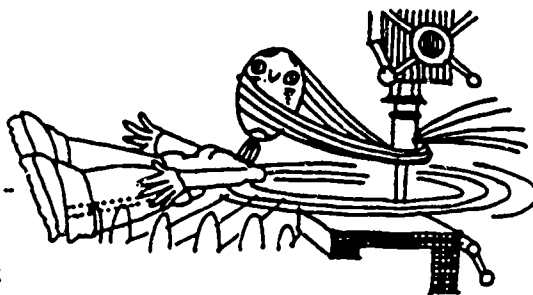
- | | | |
|--------------------|---|---|
| 1. 磨物時要用碎布去拿熱物. | 是 | 非 |
| 2. 磨光時常用磨輪之下半部. | 是 | 非 |
| 3. 寬大衣服或頭髮要整理好 | 是 | 非 |
| 4. 磨光時一定要戴護目鏡 | 是 | 非 |
| 5. 在磨角或特別地方時得特別小心. | 是 | 非 |

OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Drill Press

SAFETY SUGGESTIONS

1. Wear appropriate eye protection
2. Remove jewelry - eliminate loose clothing - confine long hair.
3. Operate only when all guards are in place.
4. Select properly sharpened drill bit - tighten in chuck and remove key.
5. Clamp material - check for safety - turn on power.
6. If a piece of work is caught in the drill -- turn off power -- do not try to stop by hand.
7. Select speed carefully -- the larger the drill the slower the speed.

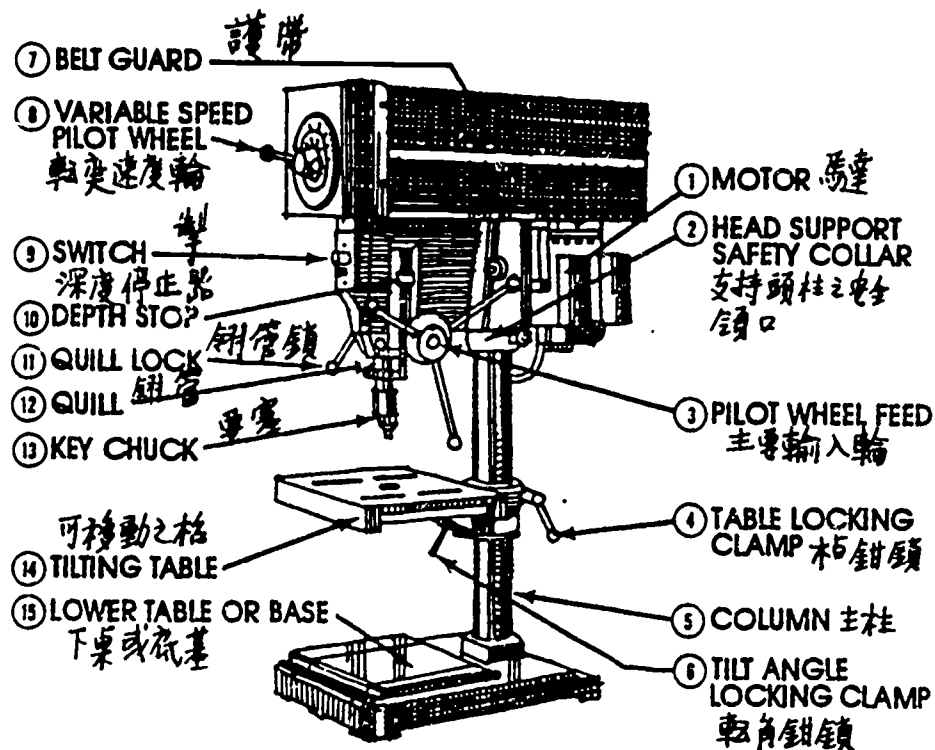


未得教師准許不得操作此機器

鑽床

安全建議

1. 戴適當之護眼鏡。
2. 除去手飾及寬大衣服，束起長髮。
3. 當所有安全裝置都妥當時方可操作。
4. 選擇適當的鑽嘴，綁緊木塞，拿去鎖。
5. 檢查鉗之安全，發動馬達。
6. 如某一物件塞在打孔器內即熄掉機器，不要用手去停止馬達。
7. 小心選擇速度，鑽愈大的速度愈少。



DRILL PRESS

Student Name _____
 Class _____
 Date _____ Grade _____

SAFETY QUIZ

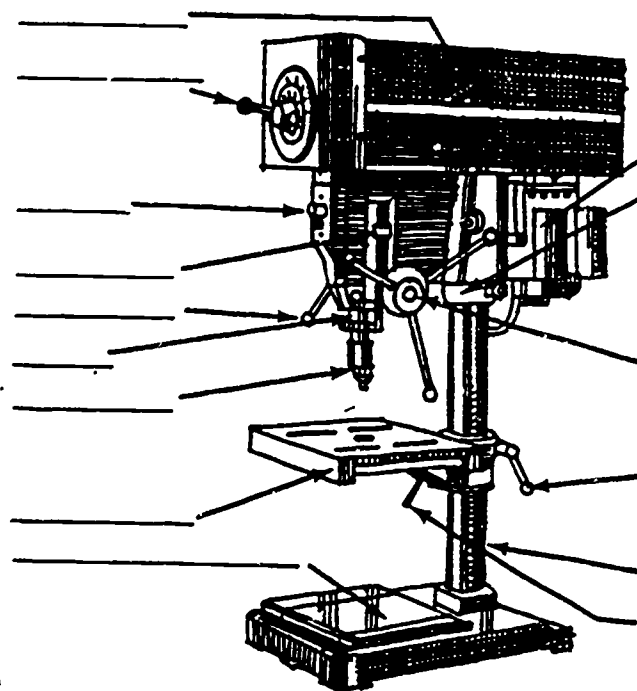
- | | | |
|--|---|---|
| 1. It is necessary to select the proper speed. | T | F |
| 2. The chuck key should be kept in the chuck at all times. | T | F |
| 3. Work should always be secured. | T | F |
| 4. Rings may be worn while operating a drill press. | T | F |
| 5. A chip brush should be used for removing chips. | T | F |
| 6. The drill should be operated at top speed for all work. | T | F |
| 7. The long end of the work should be at the left of the operator. | T | F |
| 8. Long hair must be confined in a hat or net, or tied back. | T | F |

鑽床

學生姓名 _____
 班級 _____
 日期 _____ 成績 _____

安全測驗

- | | 是 | 非 |
|----------------------|---|---|
| 1. 有必要去選擇適當的速度 | 是 | 非 |
| 2. 要緊要常留在室內 | 是 | 非 |
| 3. 機件要常檢好 | 是 | 非 |
| 4. 操作鑽床時可以戴戒指 | 是 | 非 |
| 5. 可用掃帚清理碎片 | 是 | 非 |
| 6. 在任何操作時間內以最高速度操作鑽床 | 是 | 非 |
| 7. 工具之長末端應在操作者的左邊 | 是 | 非 |
| 8. 長髮束束好在後面或束在帽子或髮網內 | 是 | 非 |



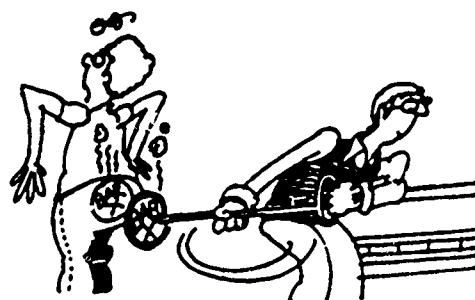
OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Gas Forge

未經教師准許不得操作此機器

煤氣熔爐

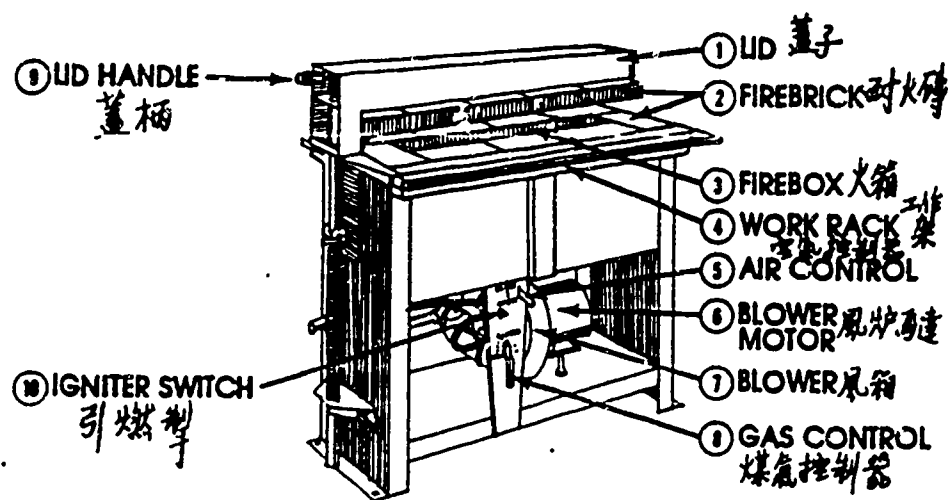
SAFETY SUGGESTIONS



1. Approved eye protection must be worn when operating forge.
2. Asbestos mittens (gloves) must be worn when the tongs cannot be used.
3. A pail of water should be nearby at all times.
4. Hot metal left unattended should be marked "HOT" with chalk.
5. The top must be open when lighting the forge.
6. When shutting down, the gas control should be turned off first.
7. Be sure gas is off "tight" when leaving the forge.

安全建議

1. 當操作熔爐時要戴面罩。
2. 如不能用鉗子時一定要帶手套。
3. 隨時在工作地點附近放一桶水。
4. 熱的金屬一定要用粉筆寫上「熱」字 "HOT"。
5. 當引燃熔爐時要打開蓋頂。
6. 當熄火時要先關去煤氣控制器。
7. 在離開熔爐時要確知煤氣已關閉。



GAS FORGE

Student Name _____
 Class _____
 Date _____ Grade _____

煤氣熔爐

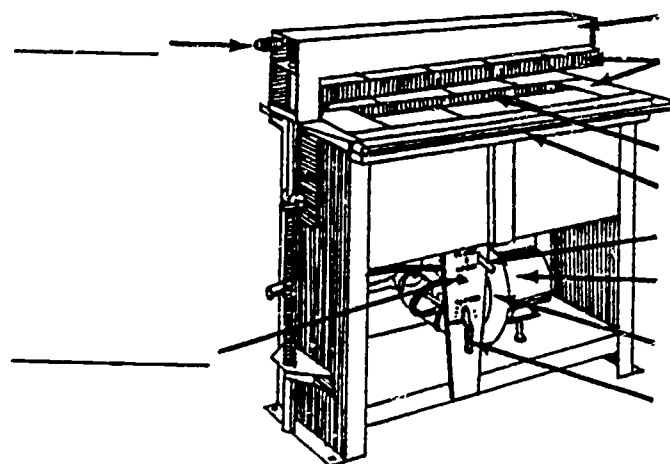
學生姓名 _____
 班級 _____
 日期 _____ 成績 _____

SAFETY QUIZ

- | | | |
|---|---|---|
| 1. Tongs should be available for the handling of hot metal. | T | F |
| 2. Gloves should be worn when handling the tongs. | T | F |
| 3. The top slot should be closed when lighting the forge. | T | F |
| 4. The air should be turned off first when shutting down. | T | F |
| 5. Hot metal should be marked "HOT". | T | F |

安全測驗

- | | | |
|-------------------|---|---|
| 1. 操作熱的金屬時得要用鉗子 | 是 | 非 |
| 2. 用鉗子時應要戴手套 | 是 | 非 |
| 3. 當點火時要關掉蓋頂 | 是 | 非 |
| 4. 當熄火時先要把空氣關掉 | 是 | 非 |
| 5. 熱的金屬應寫上「HOT」字。 | 是 | 非 |

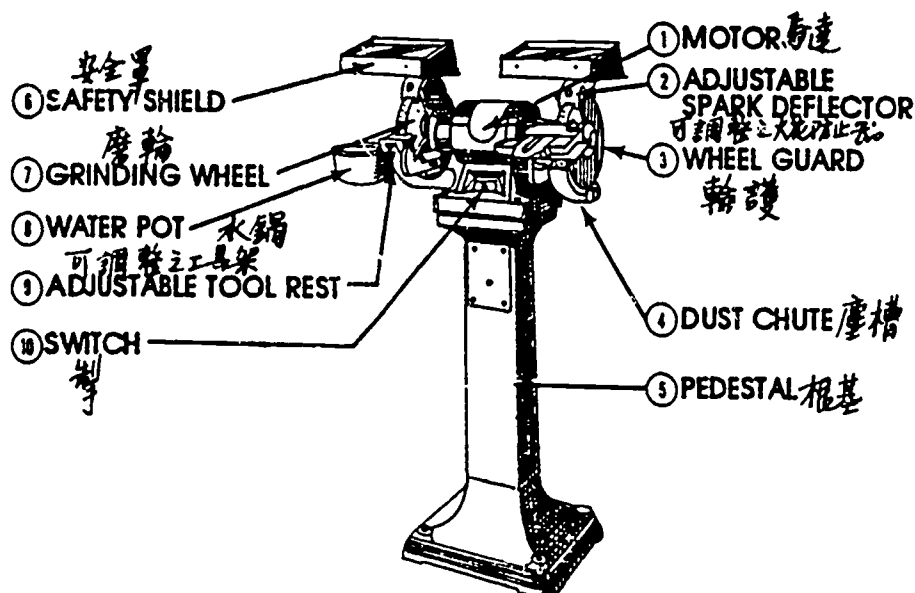
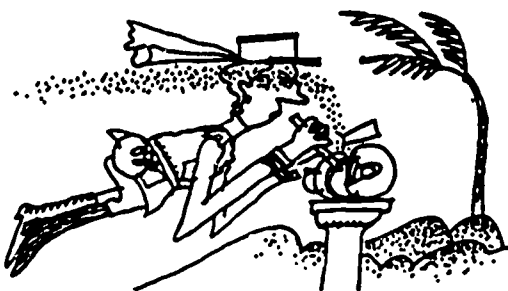


OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Grinder

SAFETY SUGGESTIONS

1. Eye protection must be worn at all times.
2. All guards must be properly adjusted.
3. The tool rest must be adjusted to 1/8" from the wheel.
4. Do not grind on the side of the grinding wheel.
5. Spark deflector or top guard must be within 1/8" of wheel.
6. Small pieces should be held with "vise grip" type pliers.
7. A wheel that is excessively worn or cracked should be discarded.
8. The glass safety shield should be clean.
9. Stand to one side when starting the machine.



未得教師准許前不得操作此機器

臼齒磨器

安全建議

1. 常常護眼鏡
2. 調整好全部之護罩
3. 把工具調整到離輪子 1/8 英寸
4. 不要用輪邊磨物
5. 火花防止器或頭護一定要距離輪子 1/8 英寸內
6. 要用 VISE GRIP 型鉗子操作細小物體。
7. 一個過用或殘舊的磨輪不被應用。
8. 安全玻璃罩一定要清潔。
9. 發動機器時要站於一邊。

GRINDER

Student Name _____
 Class _____
 Date _____ Grade _____

SAFETY QUIZ

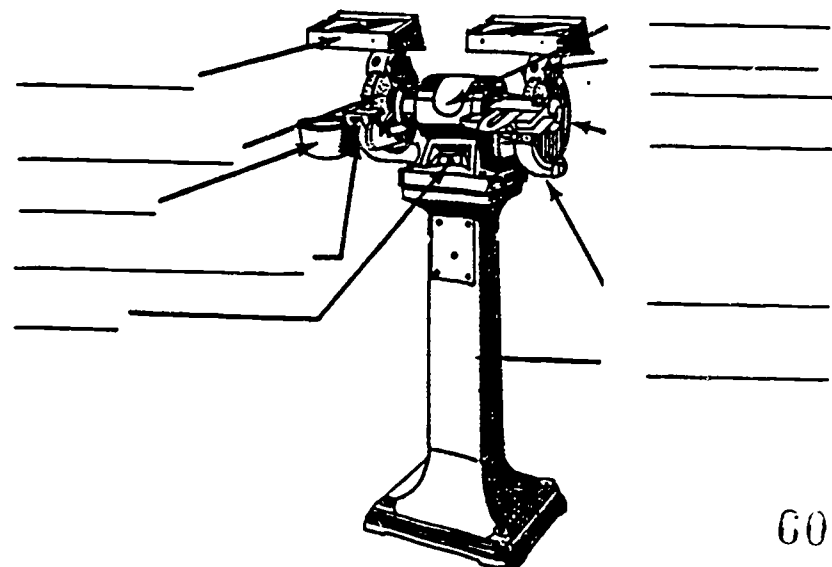
1. The tool rest should be adjusted to within 1/2" of wheel. T F
2. Eye protection is not always necessary while grinding. T F
3. Once the "off" switch is in the off position, the operator may leave. T F
4. The safety shield should be clean. T F
5. Wheels that are out of balance may be used. T F
6. The spark arrester is not necessary if there is a glass safety shield. T F
7. When grinding a small piece of steel, "vise grips" are advised. T F
8. If there is a glass shield, eye protection is not required. T F

砂轮磨器

學生姓名 _____
 班級 _____
 日期 _____ 成績 _____

安全測驗

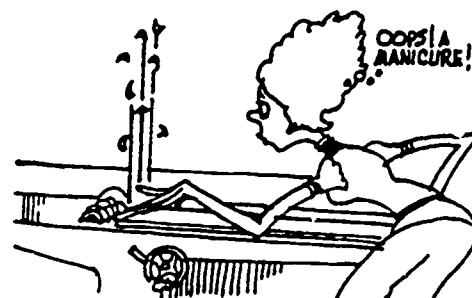
1. 工具架應調整到離輪子 1/2 英寸。 是 非
2. 在磨時不需要常戴護眼鏡。 是 非
3. 當開關在“OFF”(關)位置上時操作者便可離開。 是 非
4. 安全罩要清潔。 是 非
5. 不平衡的輪子尚可使用。 是 非
6. 如有安全玻璃罩便不必用火花防止器。 是 非
7. 當磨細少鋼物時最好用 VISE GRIPS 鉗子。 是 非



OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Jointer

SAFETY SUGGESTIONS



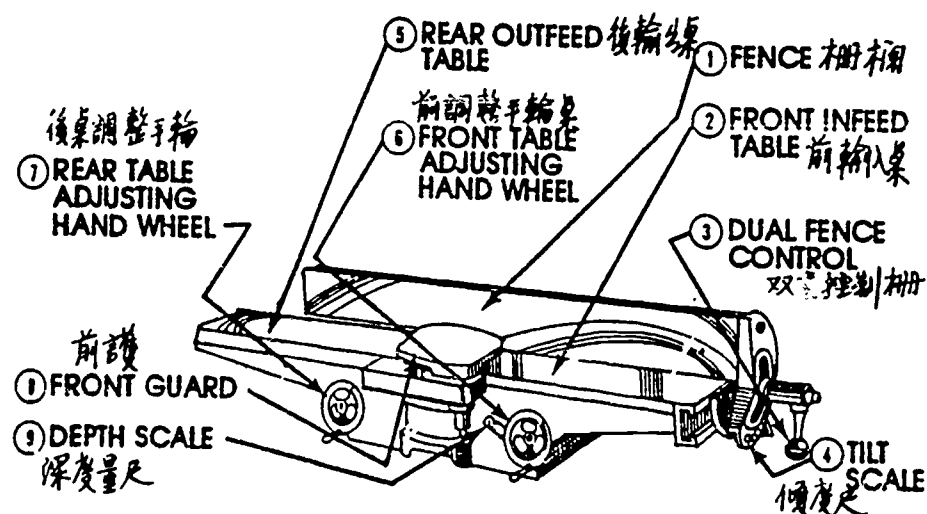
1. Before starting, make sure that guards are free and will cover the blade at all times.
2. A push stick must be used on all material that would bring the hands within 2" of the cutter.
3. An assistant should help support long pieces.
4. Several light cuts are safer than one heavy cut.
5. Wear eye protection.
6. The board being jointed must exceed the minimum length established for that particular machine (check with instructor).

未得教師准許不得用此機器

連接器

安全建議

1. 在發動機器前, 確知護罩能自由地蓋着刀片.
2. 所有材料得用推棍推到離切刀 2 吋地方.
3. 長的物件應有一幫子扶著.
4. 輕之的切割多次比大切來得安全.
5. 戴護眼鏡.
6. 連接板一定要比機器的最短長度為長 (請示教師)



S-5.09

JOINTER

Student Name _____
 Class _____
 Date _____ Grade _____

SAFETY QUIZ

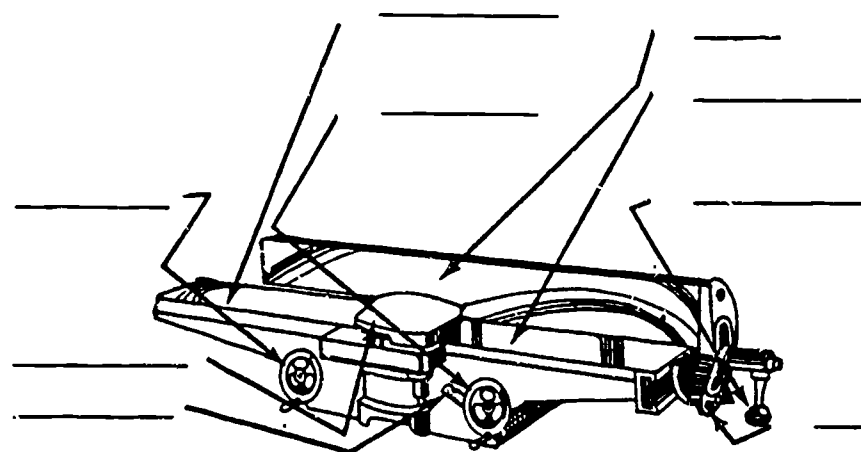
- | | | |
|--|---|---|
| 1. It is possible for the guard to stick and not cover the cutter. | T | F |
| 2. A push stick should be used when the hands could get close to the cutter. | T | F |
| 3. Eye protection is not necessary when operating a jointer. | T | F |
| 4. Permission should be obtained before using the jointer. | T | F |
| 5. Stock shorter than 6" may be processed on the jointer. | T | F |

連接器

學生姓名 _____
 班級 _____
 日期 _____ 成績 _____

安全測驗

- | | | |
|-----------------------|---|---|
| 1. 護罩可能會卡住而不蓋著切刀。 | 是 | 非 |
| 2. 當手不能接近切刀時需用一推棍。 | 是 | 非 |
| 3. 當操作連接器時不必要戴護眼鏡。 | 是 | 非 |
| 4. 操作連接器前應得准許。 | 是 | 非 |
| 5. 短於6英寸的器材可以用連接器去處理。 | 是 | 非 |

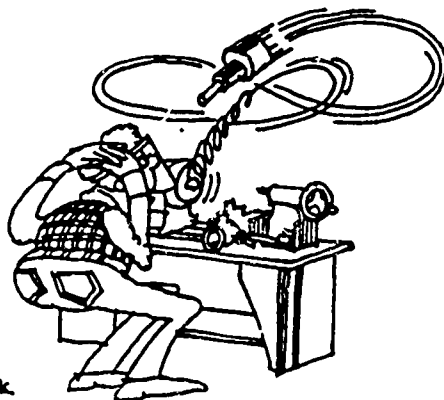


OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Metal Lathe

SAFETY SUGGESTIONS

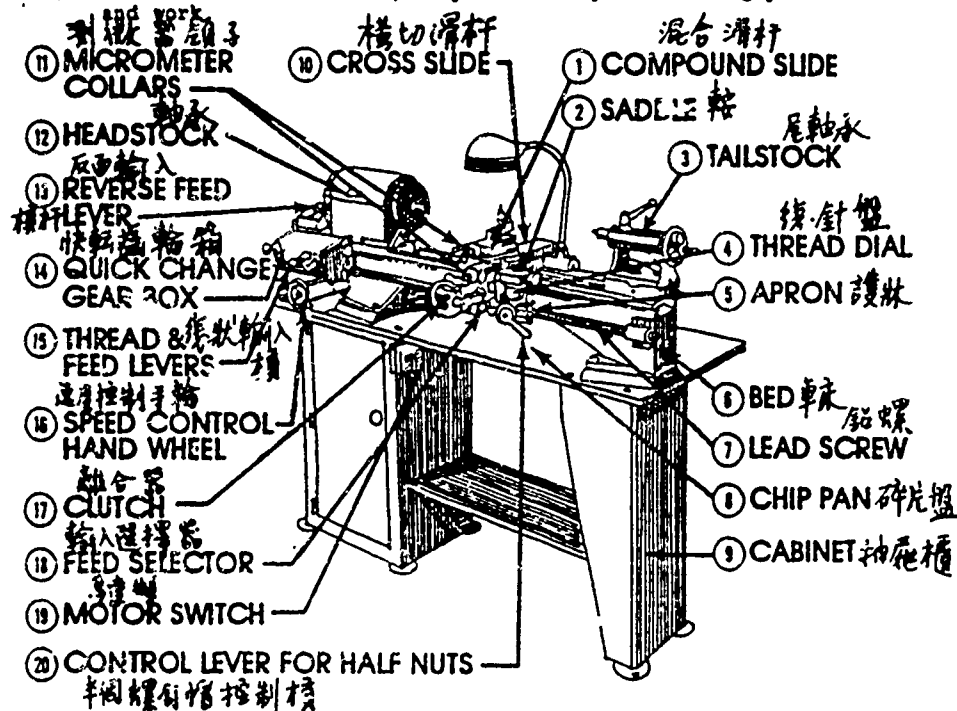
1. Wear approved eye protection.
2. Remove jewelry, eliminate loose clothing and confine long hair.
3. Do not leave the machine until it has stopped.
4. A brush should be used to remove chips.
5. The chuck should be turned by hand before starting.
6. Never leave chuck wrench in chuck.
7. Stock should be balanced and secured before starting.
8. Operate at the correct speed for the job.
9. Handle chucks with care; keep hands away from moving parts.



安全建議
未得教師准許不得操作此機器

金屬車床

1. 戴護眼鏡。
2. 除去手飾、寬衣束好長髮。
3. 機旁未定止前不要離去。
4. 用掃帚清除碎片。
5. 開動前用手轉動叉柱(搖子)。
6. 不要讓叉柱扭留在叉柱內。
7. 開動前操作物要平行和裝妥。
8. 以正確速度操作。
9. 小心操作叉柱、手部要離開轉動中的零件。



S-5.11

METAL LATHE

Student Name _____
 Class _____
 Date _____ Grade _____

SAFETY QUIZ

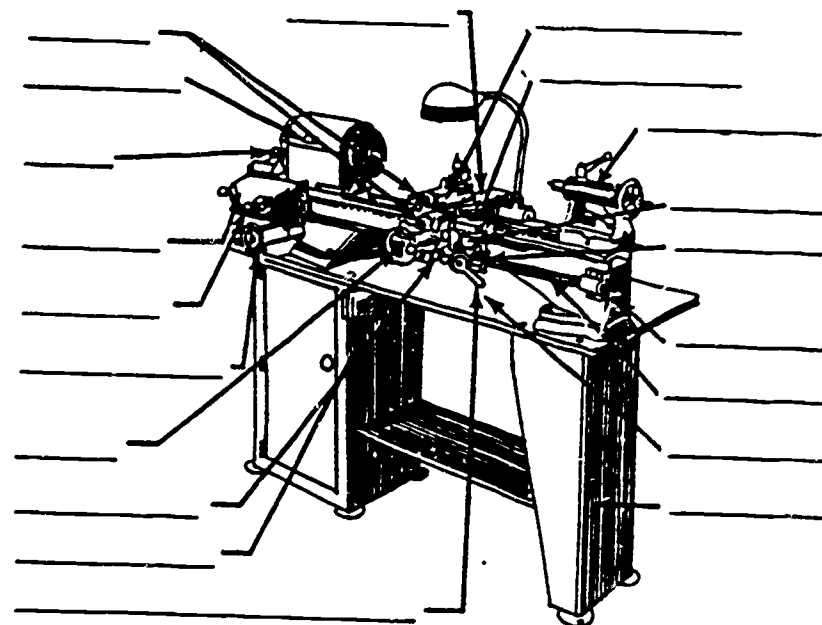
- | | | |
|--|---|---|
| 1. A brush should be used for removing chips. | T | F |
| 2. The tail stock need not be secure to the bed. | T | F |
| 3. The chuck wrench remains in the chuck when the machine stops. | T | F |
| 4. It is safe to turn machine by hand before starting. | T | F |
| 5. Measurements should be made while the machine is stopped. | T | F |

金屬車床

學生姓名 _____
 班級 _____
 日期 _____ 成績 _____

安全測驗

- | | | |
|---------------------|---|---|
| 1. 要用掃帚清除碎片。 | 是 | 非 |
| 2. 尾承軸不須要裝在車床上。 | 是 | 非 |
| 3. 當機器停止時叉柱扭應留在叉柱內。 | 是 | 非 |
| 4. 開動前用手去轉動機器是安全的。 | 是 | 非 |
| 5. 當機器停止時便可以量度大小直徑。 | 是 | 非 |

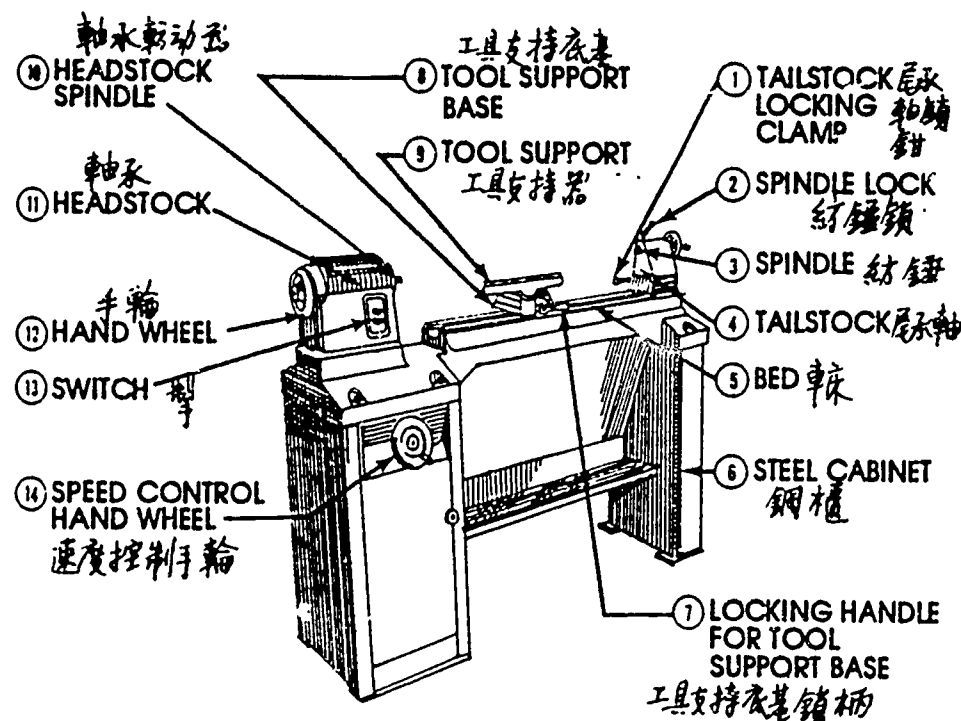


OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Wood Lathe

SAFETY SUGGESTIONS

1. Eye protection must be worn.
2. The tool rest must be close to the work when cutting tools are being used.
3. The cutting tools must be kept sharp.
4. Do not feel for smoothness of work while machine is running.
5. Work must be centered, balanced and secured.
6. The tool rest must be removed while sanding.
7. Examine setup before turning on power.
8. Shut off power while cleaning machine.
9. Long hair and loose clothing must be appropriately confined.



未得教師准許前不得操作此機器

木車床

安全提議

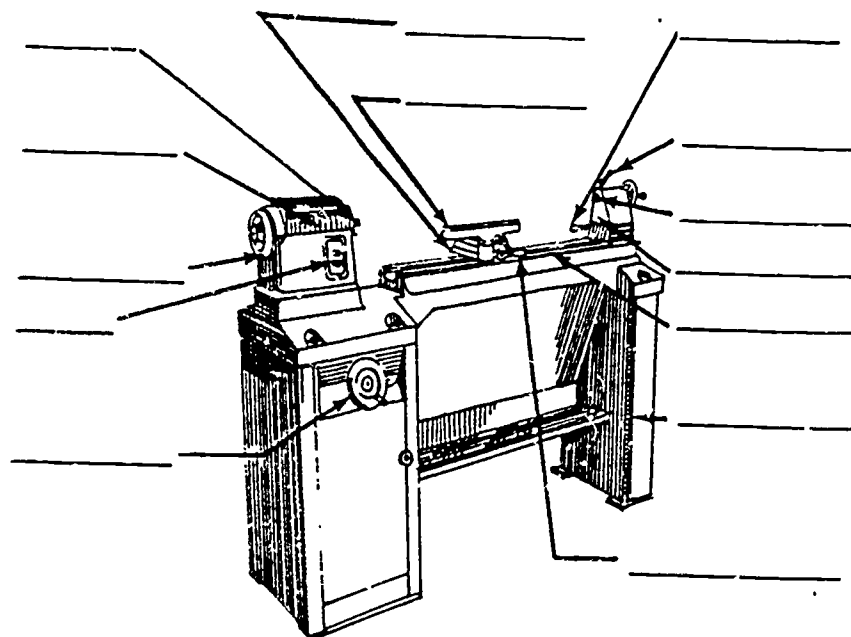
1. 戴護眼鏡
2. 當用切刀時工具一定要靠近勢作物。
3. 切割工具一定要保持銳利。
4. 當機器在轉動時不要用手去摸滑度。
5. 若作物一定要裝好在正中和平衡。
6. 當用沙紙磨滑時工具要拿走。
7. 發動馬達前一定要檢查裝置。
8. 當清理機器時要關掉馬達。
9. 長髮和寬衣一定要適當束好。

WOOD LATHE

Student Name _____
 Class _____
 Date _____ Grade _____

SAFETY QUIZ

- | | | |
|--|---|---|
| 1. The speed of the machine is not important for safe operation. | T | F |
| 2. A space of 1" is safe between the tool rest and the work. | T | F |
| 3. Eye protection is not necessary during operation. | T | F |
| 4. Dull tools may be used. | T | F |
| 5. It is safe to feel for smoothness while turning. | T | F |
| 6. The tool rest should be removed while sanding. | T | F |
| 7. It is safe to turn work that is not balanced. | T | F |
| 8. Long sleeves may be worn while operating. | T | F |
| 9. The cutting tools should be held loosely. | T | F |
| 10. The hair should be confined while operating the machine. | T | F |



木車床

學生姓名 _____
 級別 _____
 日期 _____ 成績 _____

安全測驗

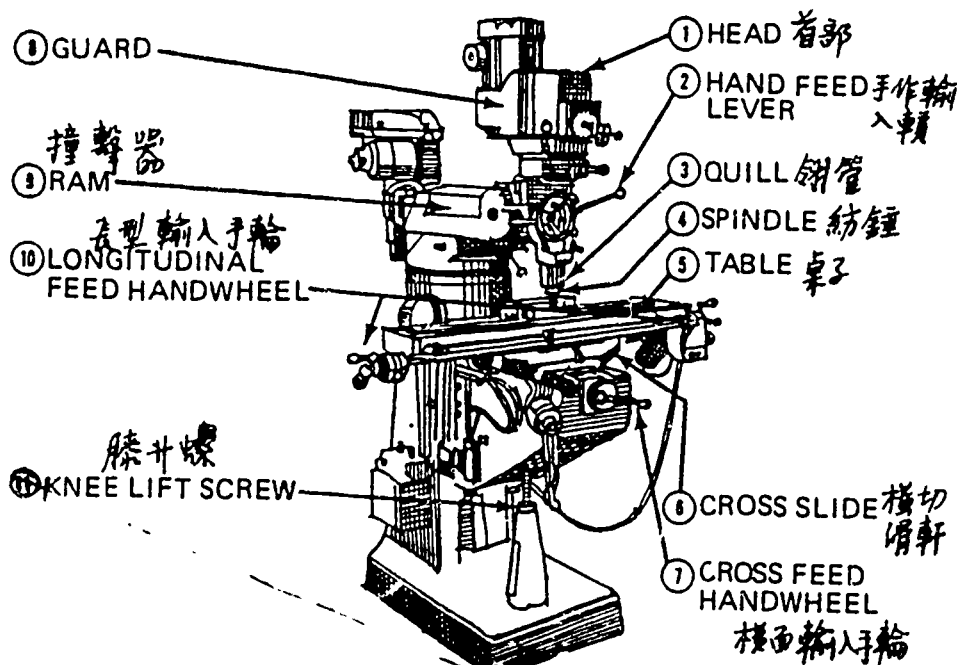
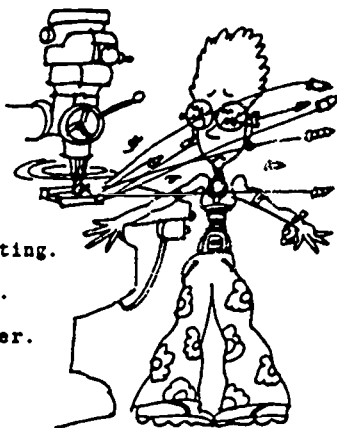
- | | | |
|----------------------|---|---|
| 1. 機器的速度對操作之安全不重要。 | 是 | 非 |
| 2. 工具架與工件之間1吋距離是安全的。 | 是 | 非 |
| 3. 操作時不必要戴護眼鏡。 | 是 | 非 |
| 4. 可以用鈍的工具。 | 是 | 非 |
| 5. 在機器啟動時去感覺滑度是安全的。 | 是 | 非 |
| 6. 在磨沙時應把工具架移去。 | 是 | 非 |
| 7. 操作不平衡的工件是安全的。 | 是 | 非 |
| 8. 操作時可穿長袖衣服。 | 是 | 非 |
| 9. 應鬆之地持着切具。 | 是 | 非 |
| 10. 當操作機器時應束起長髮。 | 是 | 非 |

OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Milling Machine

SAFETY SUGGESTIONS

1. Make adjustments and measurements only when the machine is at a complete stop.
2. Material being machined must be properly secured.
3. Make sure the cutter is rotating in the right direction. Feed against the cutter unless the machine is capable of climb cutting.
4. Handle cutters carefully as they are sharp.
5. Keep fingers a minimum of 6" from the cutter.
6. Take care to prevent jamming the vise or the work into the column, cutter, etc.
7. Start your own machine and remain with it until you have turned it off and it has come to a complete stop.
8. Never clean chips away from cutter while machine is running.
9. Eye protection must be worn.



未得教師准許不得用此機器

旋削機

安全建議

1. 只有在機器完全停止時才調整和量度
2. 操作材料一定要適當地裝好。
3. 確知切刀朝正確方向運轉。除非機器可以攀切否則對着切刀輸入
4. 切刀銳利小心運用
5. 手指要離切刀最少 6 吋。
6. 小心不要讓勞作物捲塞在機械的柱子、切刀等地方。
7. 發動你自己的機器後不要離開。直至你把機器關好和完全停止。
8. 當機器轉動時不要清理碎片。
9. 一定要帶護眼鏡

PLAHER-SURFACER

Student Name _____
 Class _____
 Date _____ Grade _____

SAFETY QUIZ

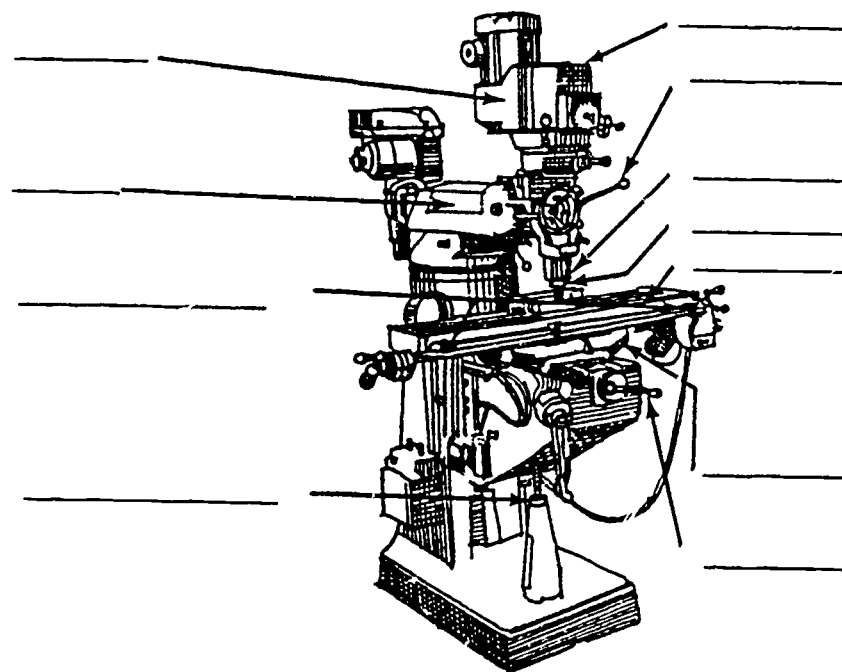
- | | | |
|--|---|---|
| 1. On long cuts it is permissible to leave the machine while on automatic feed. | T | F |
| 2. Cutters should be stored loosely on the work bench. | T | F |
| 3. Eye protection should be worn at all times. | T | F |
| 4. Swarf chips can be wiped away with the hands. | T | F |
| 5. The automatic rapid feed should not be used when the stock is closer than 6" from the cutter. | T | F |
| 6. Handles should be disengaged when on automatic feed. | T | F |

旋削機

學生姓名 _____
 級別 _____
 日期 _____ 成績 _____

安全測驗

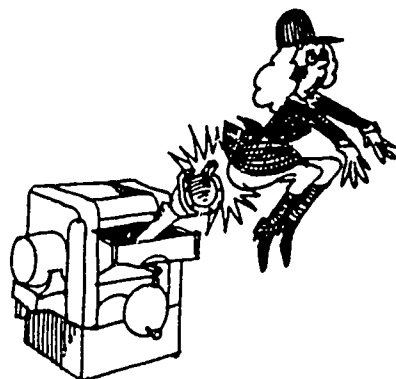
- | | | |
|--------------------------|---|---|
| 1. 當機器在自動輸入時可被准離開 | 是 | 非 |
| 2. 切刀在裝上地放在工作檯上. | 是 | 非 |
| 3. 常戴護眼鏡. | 是 | 非 |
| 4. 小碎片可用手抹去. | 是 | 非 |
| 5. 當勞作物在距切刀 6 吋時不得使用自動輸入 | 是 | 非 |
| 6. 當自動輸入時柄子應除去 | 是 | 非 |



S-5.16

OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Planer-Surfacers



SAFETY SUGGESTIONS

1. Approved eye protection must be worn.
2. A "backer board" should be used when planing thin stock.
3. Do not force material through planer.
4. Do not remove chip accumulation while machine is running.
5. Do not stand directly behind the machine or in the line of kick back.
6. Do not look into the throat of the surfacer when it is running.
7. Be sure to select the proper speed and depth of cut.
8. The board being surfaced must exceed the minimum length established for that particular machine (check with instructor).

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Chinese Version

未得教此准許不得操作此機器

捐平機

安全提議

1. 一定要戴適當的護眼鏡
2. 當設計薄木是要用支撐板
3. 不要用力把材料推過捐平機。
4. 在機器未停止時，不要清理堆積的木碎
5. 不要直接站立在機器後面
6. 當鬆動時不要察看捐平機之喉部
7. 確知選擇剝切的正確速度和深度
8. 切板的平面一定要超過最低的特別設計機器的長度。

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PLANER-SURFACER

Student Name _____
 Class _____
 Date _____ Grade _____

削平機

學生姓名 _____
 級別 _____
 日期 _____ 成績 _____

SAFETY QUIZ

- | | | |
|--|---|---|
| 1. Instructor's permission is required to operate the machine. | T | F |
| 2. Eye protection is required to operate machine. | T | F |
| 3. Chips may be removed while machine is running. | T | F |
| 4. It is safe to plane wood with loose knots. | T | F |
| 5. If material becomes stuck, it is safe to stop machine. | T | F |
| 6. Line of sight should be through the throat of the machine. | T | F |
| 7. Assistance should be obtained when planing long pieces of wood. | T | F |

安全測驗

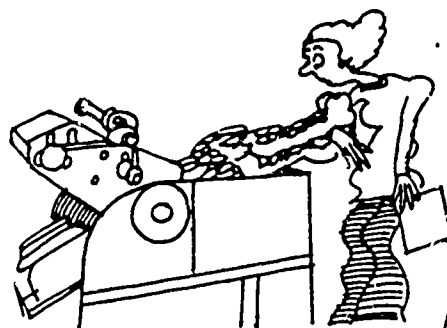
- | | | |
|---------------------|---|---|
| 1 操作機器一定要得教師允許 | 是 | 非 |
| 2 操作機器一定要戴護眼鏡 | 是 | 非 |
| 3 機器啟動時可以清理屑片 | 是 | 非 |
| 4 用鋸扣去揸木是安全的 | 是 | 非 |
| 5 如器材塞死在機內,停止機器是安全的 | 是 | 非 |
| 6 視線應經過機器的喉部 | 是 | 非 |
| 7 當削長木時要有幫手 | 是 | 非 |

OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Offset Printing Press

未得教師允許不得操作此機器

凸板印刷機

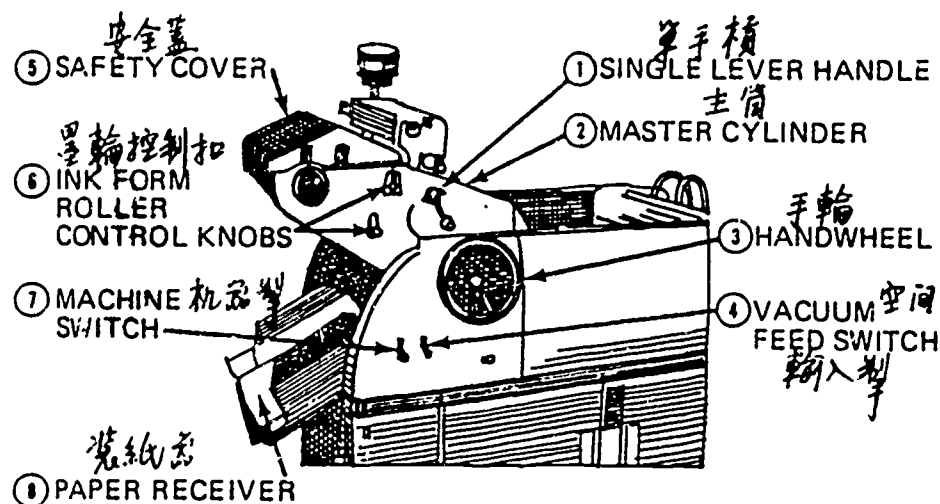


SAFETY SUGGESTIONS

1. Operate the press only when all guards are in place and properly adjusted.
2. Never reach for misprinted or dropped paper while the press is in operation.
3. Do not make internal adjustments while the press is in operation.
4. Do not clean the press while it is in operation.
5. The instructor should determine the operating speed.
6. Never reach across the press while it is in operation.
7. When finished with the press, it must be clean and all paper, equipment and tools must be returned to proper storage.

安全建議

1. 當所有的護套都裝妥和調整好才開始操作印刷。
2. 當印刷時永不去取印錯的紙張。
3. 當操作時不要作內部調整。
4. 當印刷時不要清理。
5. 教師應決定操作速度。
6. 當操作時不要伸手過機器。
7. 印刷完後，一定要清理全部紙張、儀器和工具，一定要好好放回原位。



OFFSET PRINTING PRESS

Student Name _____
 Class _____
 Date _____ Grade _____

凸板印刷機

學生姓名 _____
 級別 _____
 日期 _____ 成績 _____

SAFETY QUIZ

1. The gears need not be covered while the press is in operation.
2. The machine must be stopped before misprinted or dropped paper is removed from the press.
3. Final adjustments may be made while the machine is running.
4. You should be alert to keeping others away from the press while it is in operation.
5. It is safe to reach across the press when it is operating.

T F

T F

T F

T F

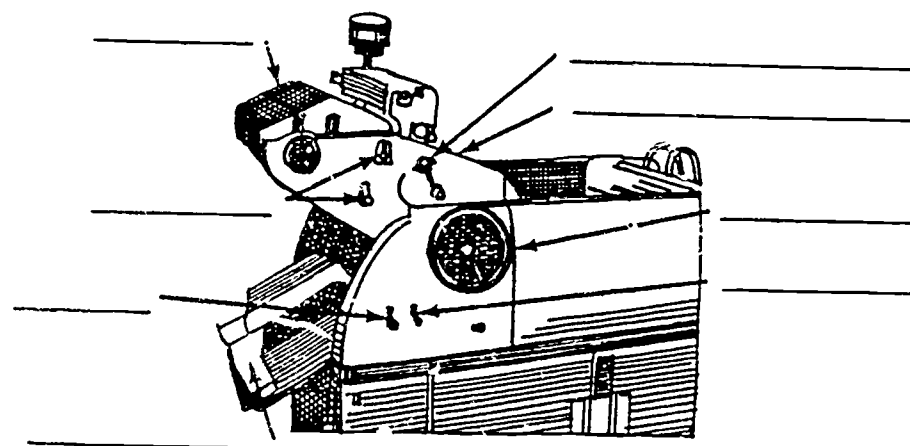
T F

安全測驗

1. 當印刷時不一定要蓋着齒輪。
2. 在清除印錯的或跌落的紙張時一定要停止機器。
3. 當機器運轉時可作最後調整。
4. 小心操作時無人站在你附近。
5. 操作時伸手過機器是安全的。

是 非

是 非

是 非
是 非

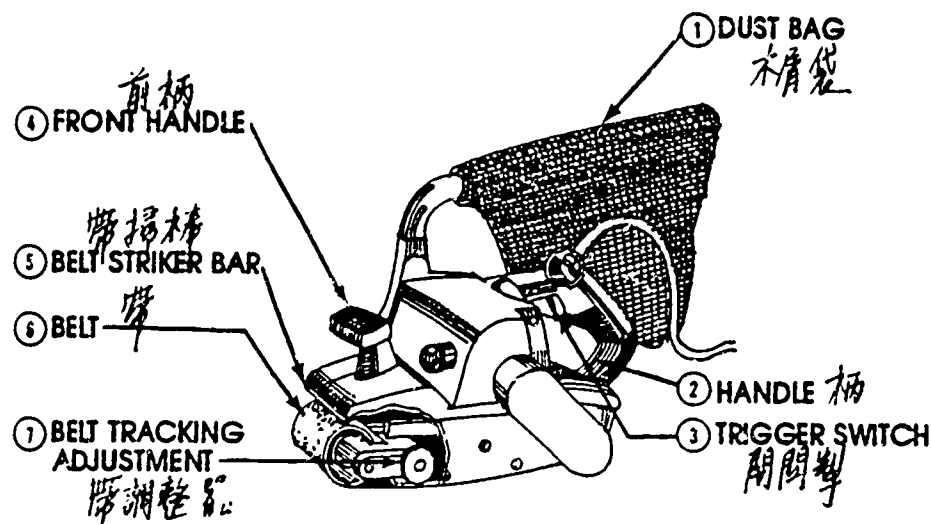
S-5.20

OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Belt Sander

SAFETY SUGGESTIONS

1. Wear approved eye protection.
2. Check to see if belt is properly installed and in good condition before starting.
3. Start sander above work; let rear of belt touch first.
4. Keep the electrical cord clear and the dust bag away from the sander belt.
5. Lift sander off the work before stopping.
6. Wait until belt is completely stopped before placing sander on bench.
7. Empty dust bag daily into proper waste container.



S-5.21

Chinese Version

未經教師准許不得操作此機器

磨帶

安全建議

1. 戴合適的護眼鏡。
2. 開動前檢查帶是否適當地裝好及充滿。
3. 在帶作物上磨沙，待帶之後部先接觸。
4. 保持電動帶清潔及木屑袋距離磨沙帶。
5. 在停止前先把帶作物自磨沙器上提起。
6. 放磨沙器在檯上前得待帶完全停止。
7. 每日清理木屑袋至廢物箱內。

BELT SANDER

Student Name _____
 Class _____
 Date _____ Grade _____

磨沙帶

學生姓名 _____
 級別 _____
 日-月-年 _____ 成績 _____

SAFETY QUIZ

1. Eye protection is required when using this machine.
2. You should have a firm grasp on the sander before starting.
3. The sander should rest on the work when starting.
4. A wood sander should not be used on steel.
5. This machine should be examined before starting.

T F

T F

T F

T F

T F

安全測驗

1. 用此機器時要戴護眼鏡
2. 開動前你要拿穩磨沙器
3. 當開始時磨沙器應放在工件上
4. 木磨沙器不應用在鋼鐵上
5. 開始前應檢查此機器

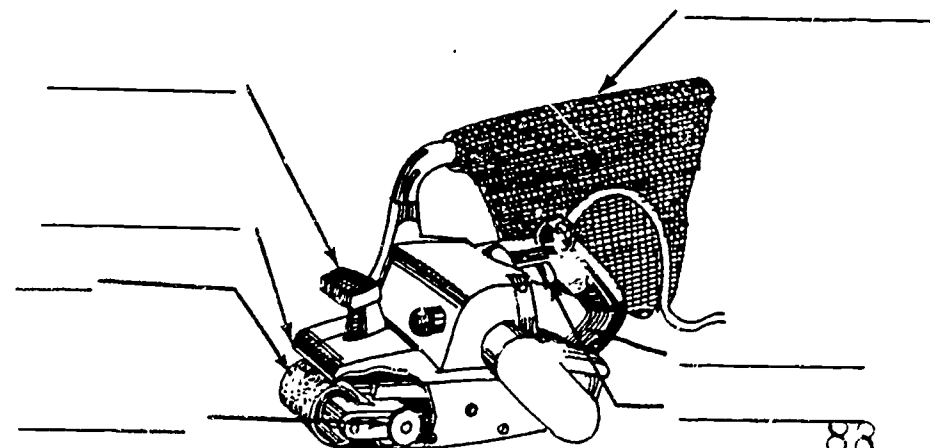
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是 非



OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Band Saw

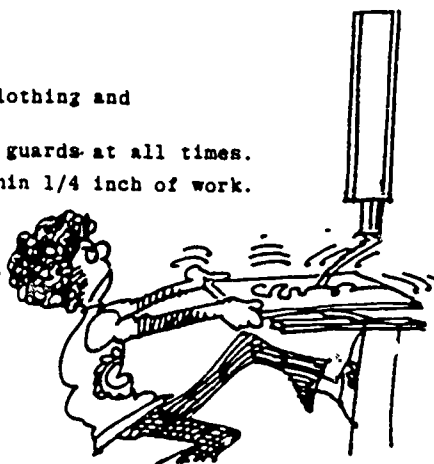
未得教師准許不得操作此機器

Chinese Version

鑄鋸

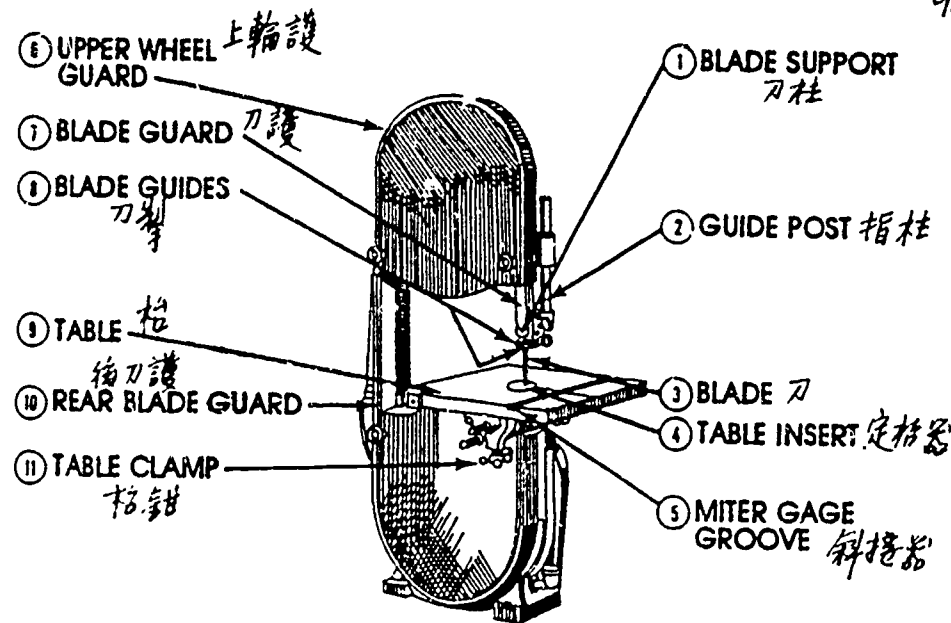
SAFETY SUGGESTIONS

1. Wear approved eye protection.
2. Remove jewelry, eliminate loose clothing and confine long hair.
3. Use properly secured and adjusted guards at all times.
4. Adjust the guide and guard to within 1/4 inch of work.
5. Remove scrap only when machine is stopped.
6. Avoid backing out of a cut (kerf).
7. Keep hands and fingers in such a position that there is no danger of their slipping into the blade. Hold work piece on either side of the cutting line. Use a push stick where necessary.
8. Do not leave the machine until it has stopped.
9. Consult with your instructor before cutting large or irregular shaped pieces.



安全建議

1. 戴合適的護眼鏡。
2. 除去手飾、寬衣、束髮。
3. 常正確地裝妥和調整好護器。
4. 把指標和護器調整到距作物 1/4 吋地方。
5. 只在機器停止後才清理木屑。
6. 避免中途退出切刀。
7. 手指手指應在一安全位置上避免滑入切口內。在切線兩邊按著作物，必要時用推木幫助。
8. 機器未停止時不要離開機器。
9. 在切大的或不定型之材料時得求教於教師。



30

BAND SAW

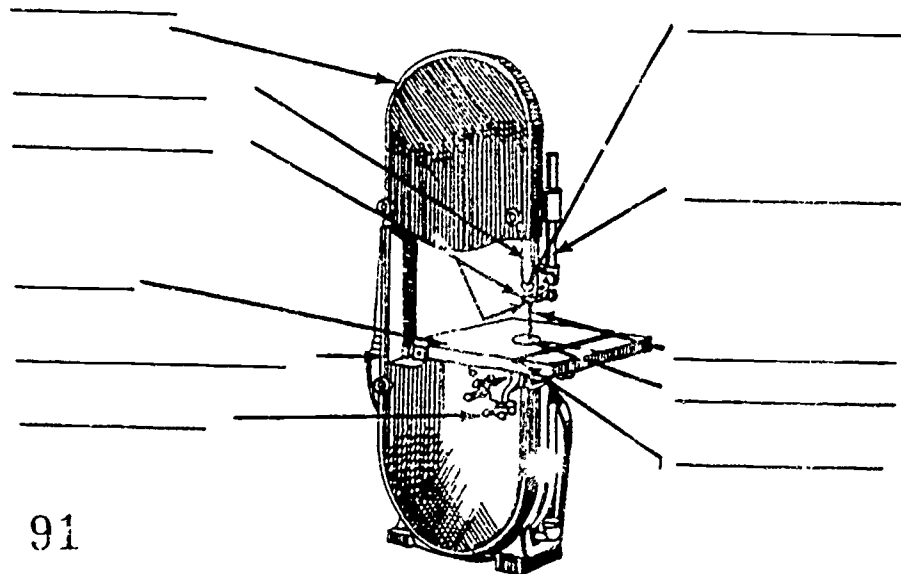
Student Name _____
 Class _____
 Date _____ Grade _____

彎鋸

學生姓名 _____
 級別 _____
 日期 _____ 成績 _____

SAFETY QUIZ

- | | | |
|---|---|---|
| 1. It is safe to tilt the table for cutting bevels. | T | F |
| 2. The lower band wheel does not require a guard. | T | F |
| 3. The saw should be stopped by forcing a piece of wood against the blade. | T | F |
| 4. The blade guard should be adjusted to about 1/4" from the work. | T | F |
| 5. It is safe to use the fence for cutting several pieces of wood to the same length. | T | F |
| 6. The hands should come no closer than 2" from the blade. | T | F |
| 7. The blade guides should be adjusted tight against the blade. | T | F |
| 8. Instructor's permission is required to operate a band saw. | T | F |
| 9. Adjustments should be made with the power off. | T | F |
| 10. Eye protection is not required when operating a band saw. | T | F |
| 11. If the work does not cut easily you should: | | |
| (a) speed up the blade | | |
| (b) push harder | | |
| (c) replace the blade | | |
| (d) check with your instructor | | |



安全測驗

- | | | |
|--|---|---|
| 1. 切斜角規時轉動桌子是安全的。 | 是 | 非 |
| 2. 彎輪的下半部不需有護蓋。 | 是 | 非 |
| 3. 迎著刀把一塊木材推過去可使鋸停止。 | 是 | 非 |
| 4. 刀護應調整高過作物 1/4 吋位置。 | 是 | 非 |
| 5. 切較塊同樣大小木材時用柵欄是安全的。 | 是 | 非 |
| 6. 手應離刀最少 2 吋地方。 | 是 | 非 |
| 7. 應把刀引對正刀調整至緊。 | 是 | 非 |
| 8. 操作彎鋸應得教師准許。 | 是 | 非 |
| 9. 開掉馬達方可調整柵欄。 | 是 | 非 |
| 10. 操作彎鋸時不須教師准許。 | 是 | 非 |
| 11. 如有困難割切木時你應：
a. 加速刀片
b. 用力推
c. 換刀片
d. 求教師老師 | | |

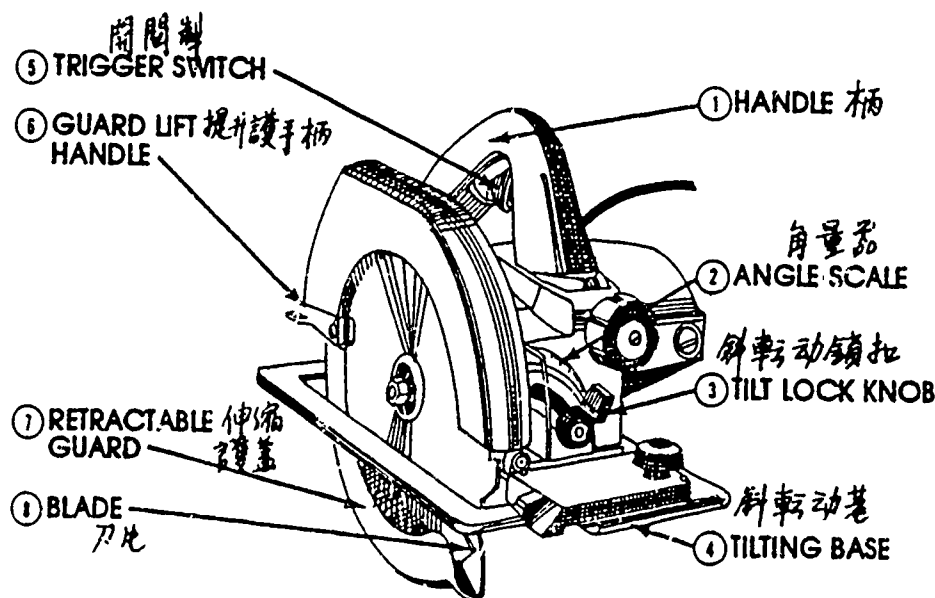
OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Portable Circular Saw

SAFETY SUGGESTIONS



1. Make sure that telescoping guard returns automatically to cover the blade after each cut.
2. Do not set saw down until blade stops.
3. Eye protection must be worn while using saw.
4. If the saw blade binds or smokes, stop cutting immediately.
5. Make sure the power cord is clear of the blade.
6. Be sure the material you are cutting is adequately supported.
7. Remove tie, rings and watch, and roll up sleeves.
8. Check the base setting for the proper depth of cut.



未得教師准許不得操作此機器

手提圓鋸

安全建議

1. 在每切一刀後確知柙撞儀蓋自動回轉至蓋下。
2. 直至刀片已停止時才放下鋸。
3. 用鋸時一定要上護眼鏡。
4. 如刀片捲綁或冒煙，馬上停止割切。
5. 確定刀片上之馬達帶清潔。
6. 確知切割中的材料正確地支撐著。
7. 除去領帶，戒指和平錶，捲起衣袖。
8. 檢查机底之正確切的深度。

PORTABLE CIRCULAR SAW

Student Name _____
 Class _____
 Date _____ Grade _____

手提圓鋸

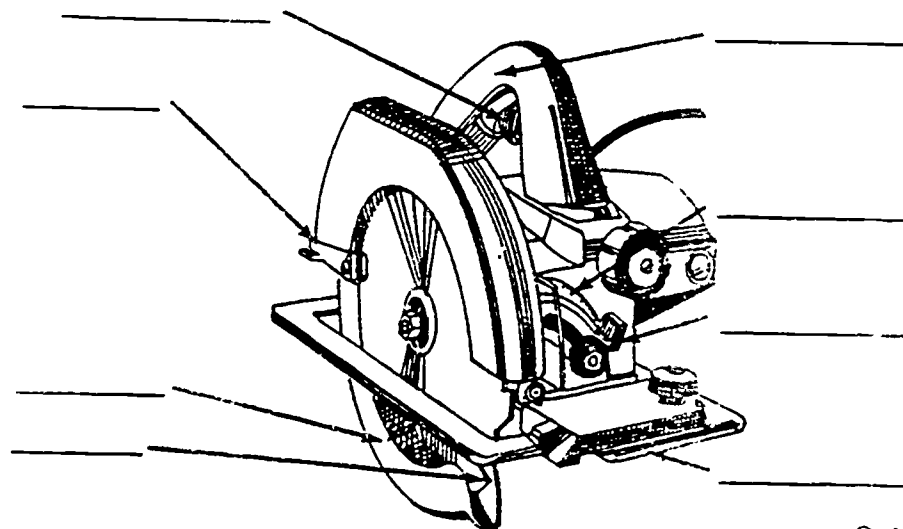
學生姓名 _____
 級別 _____
 日期 _____ 成績 _____

SAFETY QUIZ

- | | | |
|---|---|---|
| 1. Permission should be obtained before operating this machine. | T | F |
| 2. The guard can be wedged so that it will not be operable. | T | F |
| 3. Eye protection is not necessary when using this machine. | T | F |
| 4. You should not set the saw down until it has completely stopped. | T | F |
| 5. The saw blade should extend about 1/8" beyond the thickness of the material being cut. | T | F |

安全測驗

- | | | |
|---------------------------|---|---|
| 1. 在操作此機器前需要得教師允許。 | 是 | 非 |
| 2. 護蓋可能會卡住所以不可操作。 | 是 | 非 |
| 3. 用此機器時不一定要戴護眼鏡。 | 是 | 非 |
| 4. 直至鋸完全停止不應放下鋸。 | 是 | 非 |
| 5. 鋸片應伸長至切割材料 1/8 吋厚度的地方。 | 是 | 非 |

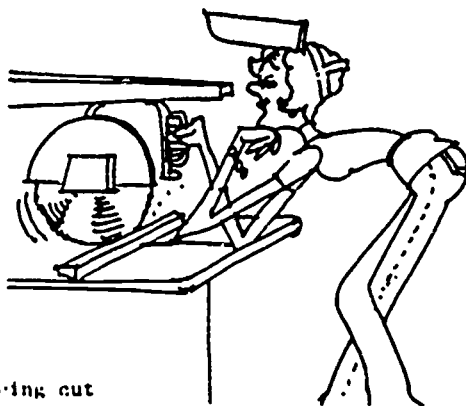


OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Radial Arm Saw

SAFETY SUGGESTIONS

1. Be sure that the saw travels easily on the arm.
2. Be sure that the blade will not extend beyond the front of the table.
3. Before starting make sure that the guard telescopes properly.
4. Make sure that the blade is stopped before leaving the machine.
5. Make sure that the material being cut is tight against the fence.
6. Eye protection must be worn while operating this machine.
7. Be sure the saw returns to the rear of the table at the completion of the cut.

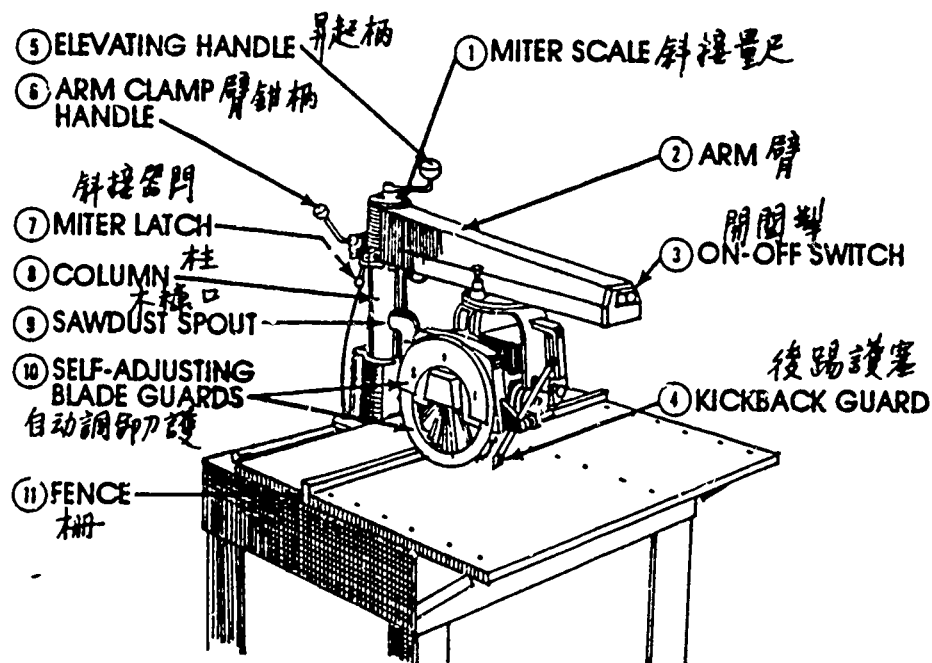


未得教師准許不得操作此機器

旋臂鋸

安全建議

1. 確知鋸在臂上運轉自如。
2. 確知刀片不會伸過枱的前面。
3. 開動前確知速護正確地嵌入。
4. 離開機座前確知刀片已停止。
5. 確知被切物緊綁於柵上。
6. 操作時一定要帶護眼鏡。
7. 確知在完成割切後鋸回到枱的後面。



RADIAL ARM SAW

Student Name _____
 Class _____
 Date _____ Grade _____

SAFETY QUIZ

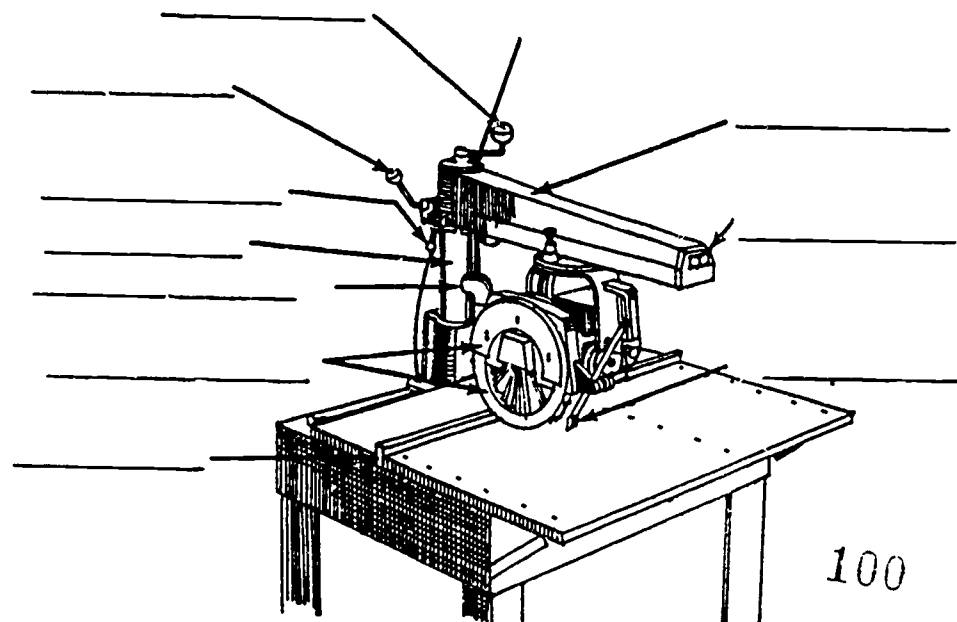
- | | | |
|---|---|---|
| 1. Eye protection is not necessary except when ripping. | T | F |
| 2. You may leave the machine as soon as you have pushed the "off" switch. | T | F |
| 3. The guard must be in place when ripping. | T | F |
| 4. The saw blade may extend beyond the table. | T | F |
| 5. The blade should be installed so that in cross cut position the teeth at the bottom of the blade point away from the operator. | T | F |
| 6. When ripping, one hand must hold the material and the other hand operate the saw. | T | F |
| 7. In cross cutting, the saw should automatically return to the rear of the radial arm upon the completion of a cut. | T | F |

旋臂鋸

學生姓名 _____
 級別 _____
 日期 _____ 成績 _____

安全測驗

- | | | |
|----------------------------|---|---|
| 1. 除非關閉否則不用戴護眼鏡。 | 是 | 非 |
| 2. 當你按下 "off" 掣時即可離開機器。 | 是 | 非 |
| 3. 關閉時護蓋一定要定位。 | 是 | 非 |
| 4. 鋸片可以伸出枱面。 | 是 | 非 |
| 5. 刀片要裝好所以在橫切位置時刀片不會對着操作者。 | 是 | 非 |
| 6. 在橫切時, 鋸片自動回到旋臂鋸後面。 | 是 | 非 |

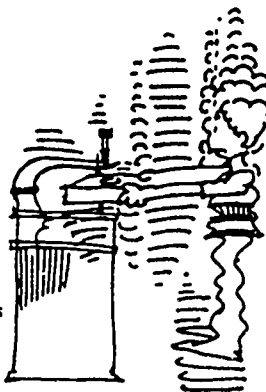


OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Scroll Saw

SAFETY SUGGESTIONS

1. Eye protection must be worn while operating this machine.
2. Make all adjustments before turning on scroll saw.
3. Lower the hold-down so that the spring fingers bear lightly on the work.
4. The danger area is within the "line of cut". Hold work piece with both hands on either side of the "saw line".
5. Shut off power and clean the machine before you leave it.
6. Avoid overloading the machine by feeding the stock too fast.
7. Avoid pinching the blade by turning too sharply.

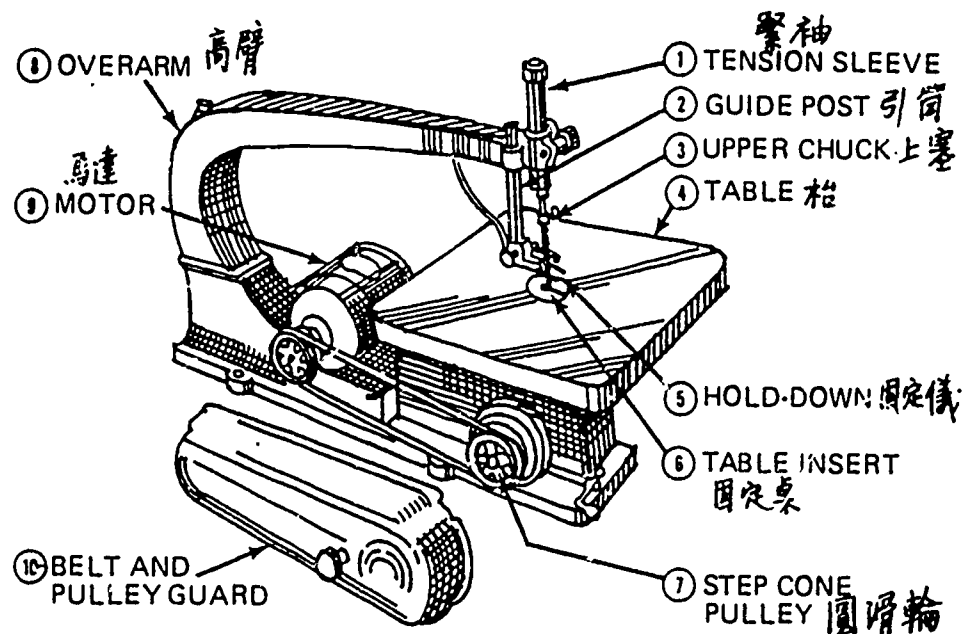


未經教師准許不得操作此機器

渦鋸

安全建議

1. 操作時一定要戴護眼鏡。
2. 在啟動渦鋸前調整機器。
3. 放低穩定器使彈簧輕輕貼在勞作物上。
4. 「切縫」內是危險地帶，用雙手扶著勞作物在「鋸縫」邊沿。
5. 在離開機器前關掉馬達清理機器。
6. 避免輸入勞作物過快，以使機器負荷過重。
7. 避免啟動得太厲害，使夾著刀口。



SCROLL SAW

Student Name _____
 Class _____
 Date _____ Grade _____

滑鋸

學生姓名 _____
 級別 _____
 日期 _____ 成績 _____

SAFETY QUIZ

1. If the blade pinches in the kerf do not stop the machine.
2. Eye protection must be worn.
3. It is not necessary to have the flat side of the stock next to the table.
4. Fingers should be kept away from the line of cut.
5. Adjustments may be made while the saw is running.
6. The hold-down should bear lightly on the work.

T F

T F

T F

T F

T F

T F

安全測驗

1. 假如刀片夾著鋸口不要停止機器。
2. 一定要戴護眼鏡。
3. 不必要使勞作物的平面附於桌上。
4. 手指要離開切縫。
5. 當鋸在转动中時可調整機器。
6. 固定器應輕輕放在勞作物上。

是 非

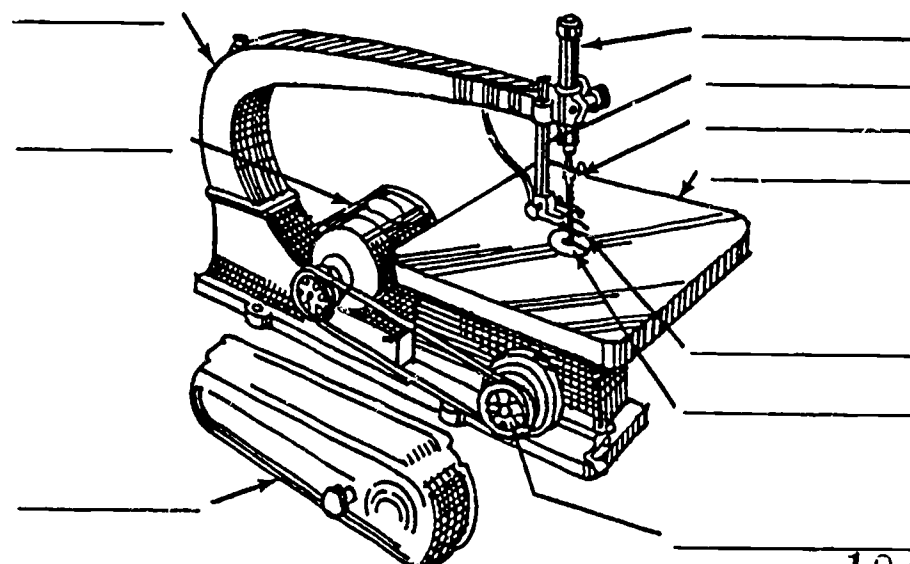
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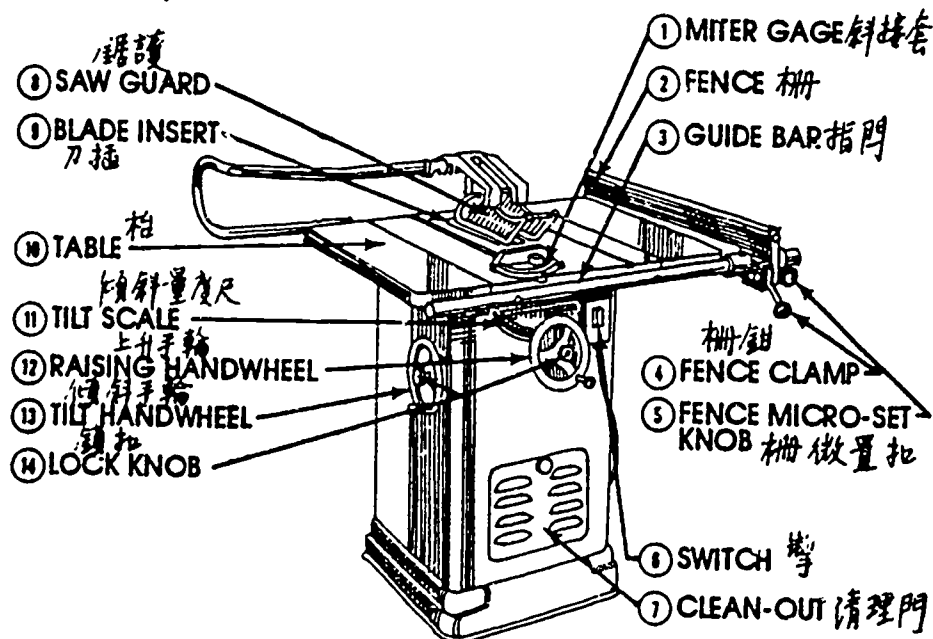
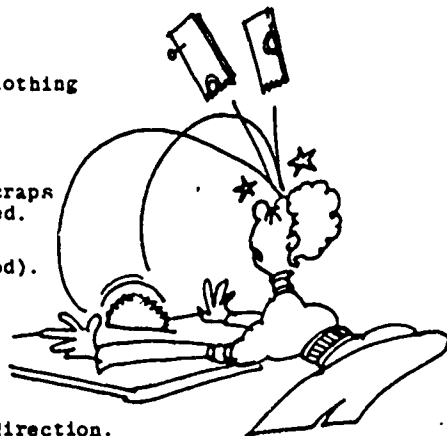


OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Table Saw

SAFETY SUGGESTIONS

1. Wear approved eye protection.
2. Remove jewelry, eliminate loose clothing and confine long hair.
3. Use properly secured and adjusted guards at all times.
4. Make all adjustments and remove scraps with the machine completely stopped.
5. Select proper blade and set at correct height (1/8 inch above wood).
6. Never saw freehand - never reach over the saw blade.
7. Stand to the side - not in line with the blade.
8. Make sure blade is installed with the teeth pointing in the proper direction.
9. A push stick should be used when the hands come within 3 inches of the blade.
10. Use the rip fence for ripping and miter gauge for crosscutting.
11. Stop the machine, lower blade below table, and clean up scraps when completed.



未得教師准許不得操作此機器

枱鋸

安全建議

1. 戴適合的護眼鏡。
2. 除去手飾、寬衣、束起長髮。
3. 常常安裝好和調整好護蓋。
4. 當機器完全停止時調整好機件和清除碎片。
5. 選擇合適的刀片和裝在正確高度（在木材 1/8 吋以上）
6. 永不要隨手鋸切 —— 不要伸手過鋸面
7. 站在鋸的一邊 —— 不要與鋸同一線
8. 確知刀片裝妥後其齒輪指向正確的方向。
9. 當手離刀片 3 吋時應用推棍
10. 撕裂時要用防裂柵、橫切時用薄帽測量器。
11. 當完工時停止機器、放刀片於柵下、清理碎片

TABLE SAW

Student Name _____
 Class _____
 Date _____ Grade _____

枱鋸

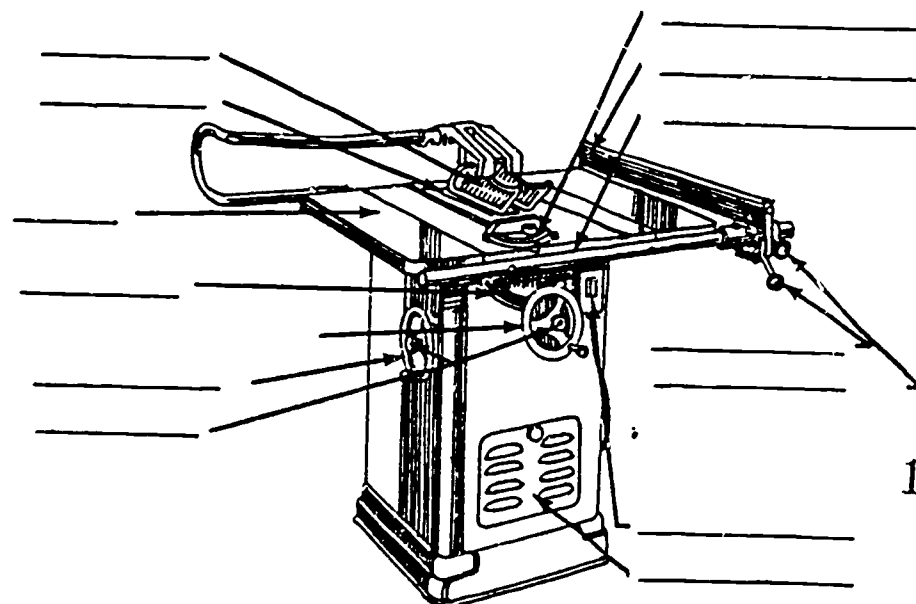
學生姓名 _____
 級別 _____
 日期 _____ 成績 _____

SAFETY QUIZ

- | | | |
|--|---|---|
| 1. It is safe to saw freehand. | T | F |
| 2. The fence should always be used. | T | F |
| 3. The guard is not always necessary. | T | F |
| 4. When ripping it is best to stand directly behind the blade. | T | F |
| 5. Eye protection should be worn when using a table saw. | T | F |
| 6. The saw blade should be adjusted so that the teeth clear the thickness of material by the depth of the teeth. | T | F |
| 7. A helper or roller should be used when ripping long pieces. | T | F |
| 8. A push stick is necessary when ripping narrow stock. | T | F |

安全測驗

- | | | |
|----------------------|---|---|
| 1. 徒手鋸物是安全的。 | 是 | 非 |
| 2. 左常用欄柵。 | 是 | 非 |
| 3. 不常需要護蓋。 | 是 | 非 |
| 4. 當裂開時最好直接站在刀片後面。 | 是 | 非 |
| 5. 當用鋸時應戴護眼鏡。 | 是 | 非 |
| 6. 鋸片應調整到其齒輪與材料厚度相符。 | 是 | 非 |
| 7. 當撕裂長木時需要一幫手或滑輪。 | 是 | 非 |
| 8. 當撕裂窄木時要用推棍。 | 是 | 非 |



OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Metal Shaper



SAFETY SUGGESTIONS

1. Wear approved eye protection.
2. Make adjustments and measurements only when the machine is at a complete stop.
3. Securely mount the work piece in the holding device.
4. Make certain that the ram and head will clear the work and holding devices.
5. Keep hands and fingers a minimum of 6 inches from the cutting tool and all other moving parts.
6. Avoid laying tools on the machine.
7. Avoid standing directly in front of or behind the ram.
8. Make sure machine comes to a complete stop before leaving it.
9. Never remove chips while the machine is in motion.
10. Return the machine to normal and all tools and equipment to the proper storage place.

Chinese Version

未得教師准許不得操作此機器

金屬成形機

安全建議

1. 戴合適護眼鏡。
2. 調整和量度得要等機器完全停止時行之。
3. 穩當地將金屬片裝在器械上。
4. 確知機械上的鉗子和首部已裝穩(撞擊器)。
5. 將手和手指最少保持與切具和轉動中的零件 6 吋英上的距離。
6. 避免將工具放在機器上。
7. 避免站在撞擊器的前或後面。
8. 離開機器前確知機器已完全停止。
9. 當機器轉動中切勿清理碎物。
10. 將機器回到正常, 工具裝備放回適當的儲藏地方。

METAL SHAPER

Student Name _____
 Class _____
 Date _____ Grade _____

金屬成形機

學生姓名 _____
 級別 _____
 日期 _____ 成績 _____

SAFETY QUIZ

- | | | |
|--|---|---|
| 1. It is permissible to use compressed air to remove chips while the machine is running. | T | F |
| 2. Eye protection must be worn. | T | F |
| 3. A heavy cut may get the job done more quickly but also could be unsafe. | T | F |
| 4. Chips may be removed while the machine is running. | T | F |
| 5. All clearances should be checked before the ram is set in motion. | T | F |
| 6. All set-ups should be approved by your instructor. | T | F |

安全測驗

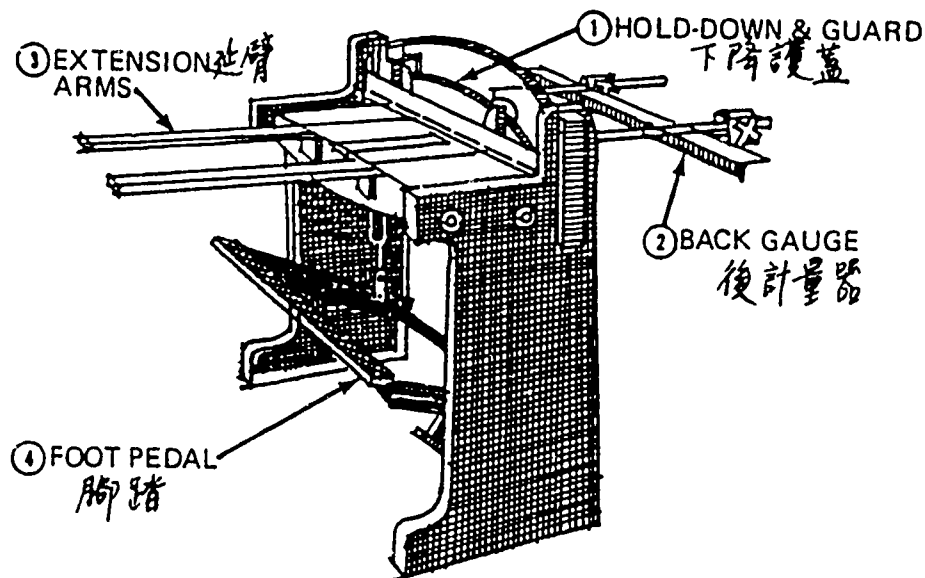
- | | | |
|--------------------------|---|---|
| 1. 當機器在轉動中時可以壓縮空氣去清除屑片. | 是 | 非 |
| 2. 一定要戴護眼鏡. | 是 | 非 |
| 3. 一大切割可以加快完成工作,但本可能不安全. | 是 | 非 |
| 4. 當機器轉動時可以清理木屑. | 是 | 非 |
| 5. 當開動撞擊器前一定要徹底檢查. | 是 | 非 |
| 6. 全部裝備須要得到教師的准許. | 是 | 非 |

Metal Squaring Shear

OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

SAFETY SUGGESTIONS

1. Check setup and machine before operating.
2. Never surpass the capacity of the machine.
3. Feed and operate from the front or the operator's position.
4. Always keep your fingers away from the pressure bar and blade, a minimum of 4 inches.
5. Keep the foot that is not being used out from under the treadle.
6. Allow small pieces to drop; do not attempt to catch them.
7. Remove burrs before working; gloves or pads are recommended for handling sheet metal, especially large pieces.
8. Place scraps or trimmings in metal waste container and return machine to normal position.
9. Whenever two people are needed to operate the shear, one shall be the operator, the other the helper.



未得教師准許不得操作此機器

才型金屬剪床

安全建議

1. 在操作前檢查裝備及機器
2. 永不要超過機器的容量。
3. 輸入與操作時由操作者的前方或位置進行。
4. 手指要保持4吋以上與氣壓棒和刀片的距離。
5. 不要把置閒的一足置於剪床下。
6. 容許小體積的屑片落地,不要嘗試去撿著它。
7. 工作前先清理粗糙孔緣,在操作金屬片,尤其是大的金屬片,最好用手套。
8. 完工後將碎片放入廢物箱把機器放回原來位置。
9. 當情況須要二人操作剪床時,一人負責操作另一人為幫手。

METAL SQUARING SHEAR

Student Name _____
 Class _____
 Date _____ Grade _____

SAFETY QUIZ

1. Feed and operate from the treadle side of the machine only.
2. It is permissible to let small pieces drop into a box as they are cut.
3. Two students may operate the shear together.
4. For some projects the guard can be removed.
5. The foot treadle should be so arranged that there is a 2" floor clearance at the bottom of a stroke.

T F

T F

T F

T F

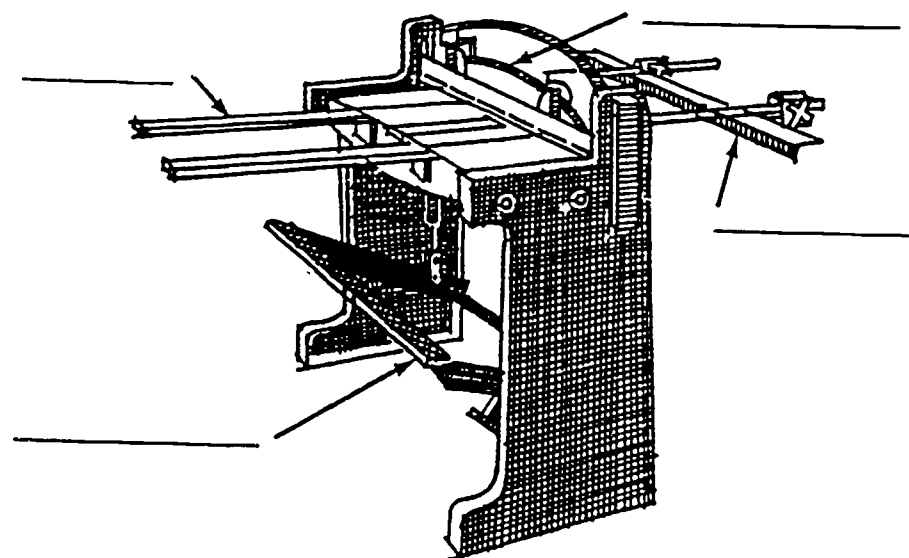
T F

方型金屬剪床

學生姓名 _____
 級別 _____
 日期 _____ 成績 _____

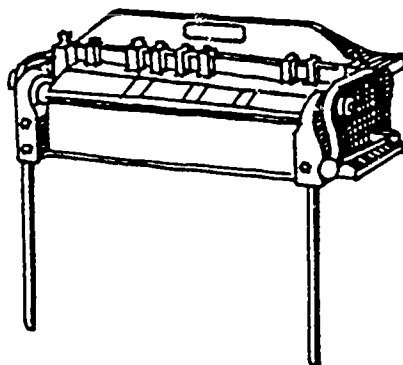
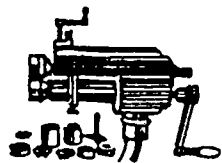
安全測驗

- | | | |
|--------------------|---|---|
| 1. 輸入和操 時只站在腳踏板旁 | 是 | 非 |
| 2. 雷切割時准許小塊碎片跌落箱子中 | 是 | 非 |
| 3. 兩個學生可以共同操作剪床 | 是 | 非 |
| 4. 有些勞作可以移去護蓋 | 是 | 非 |
| 5. 腳踏板要離地2吋 | 是 | 非 |



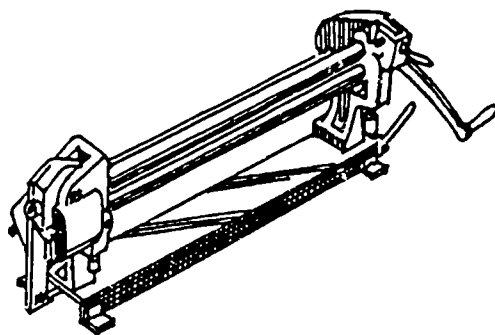
OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THESE MACHINES

Sheet Metal Machines



SAFETY SUGGESTIONS

1. Remove sharp burrs and edges from sheet metal before attempting to work it in the machines.
2. Never attempt to bend, roll, crimp, bead, etc., metal which is heavier than the capacity of the machine.
3. Keep hands and fingers clear of moving parts.
4. Never work more than one thickness of metal at one setup.
5. Avoid slamming or dropping the handles of the machine.
6. Be careful that moving parts or metal do not strike others.
7. Take care not to place hands in a position that will allow them to slip into the rolls, jaws, etc.



未得教師准許不得操作此機器

金屬板機器

安全建議

1. 當嘗試在機器上操作時先清理金屬板之粗糙孔邊。
2. 永不嘗試去彎曲、滾軋、捲縮、串起比機器容量較大的金屬片。
3. 手和手指要離開轉動中的零件。
4. 每次裝條只能操作一有厚度的金屬板。
5. 避免砰然閉開或跌下機器的柄。
6. 小心轉動中的零件和金屬不互相撞擊。
7. 小心不要讓手滑進捲輪、齒輪等中。

SHEET METAL MACHINES

Student Name _____
 Class _____
 Date _____ Grade _____

SAFETY QUIZ

1. The infeed rolls of a roll machine are dangerous to the operator's hands. T F
2. Sheet metal machines can be damaged by overloading. T F
3. Sharp burrs and edges should be removed before attempting to place in the machine. T F
4. Fingers must be kept clear of moving parts. T F
5. Quarter inch mild steel stock can be formed on the sheet metal machine. T F

金屬板機器

學生姓名 _____
 級別 _____
 日期 _____ 成績 _____

安全測驗

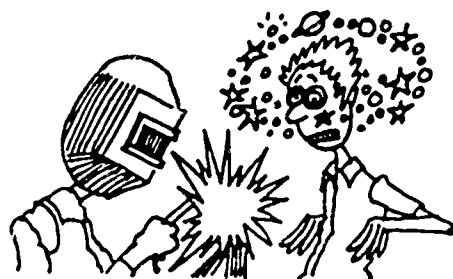
1. 滾轉輸入機器對操作者的手是危險的。 是 非
2. 過載會損壞金屬板。 是 非
3. 在嘗試操作機器前先清理粗糙孔緣。 是 非
4. 手指不要靠近轉動中的零件。 是 非
5. 金屬板機器可以製造半吋厚柔鋼。 是 非

OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Arc Welder

SAFETY SUGGESTIONS

1. A welding helmet must be worn when welding.
2. Proper ventilation must be available.
3. Goggles must be worn when chipping slag.
4. Others in the area must be warned prior to striking an arc.
5. Gloves and proper clothing must be worn when welding.
6. Closed containers should not be welded without the instructor's permission.
7. Do not stand in wet areas while welding.
8. Screens to protect others must be in place before welding is started.

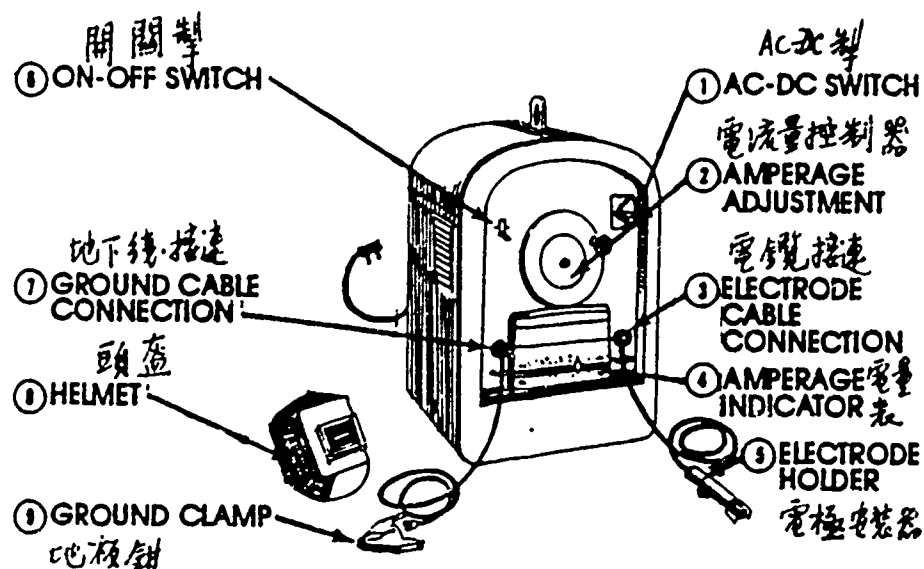


未得教師准許不得操作此機器

弧形熔焊機

安全建議

1. 燒焊時一定要帶頭盔。
2. 要有適合的通風設備。
3. 當切熔渣時，一定要帶護目鏡。
4. 開始燒焊前確知無別人在工作區。
5. 手套和合適的衣服是燒焊時必要的。
6. 封蓋的容器未得教師准許不得燒焊。
7. 當燒焊時不要站在濕滑的地方。
8. 當開始燒焊前一定要架起保護別人的隔板。



ARC WELDER

Student Name _____
 Class _____
 Date _____ Grade _____

弧形熔焊機

學生姓名 _____
 級別 _____
 日期 _____ 成績 _____

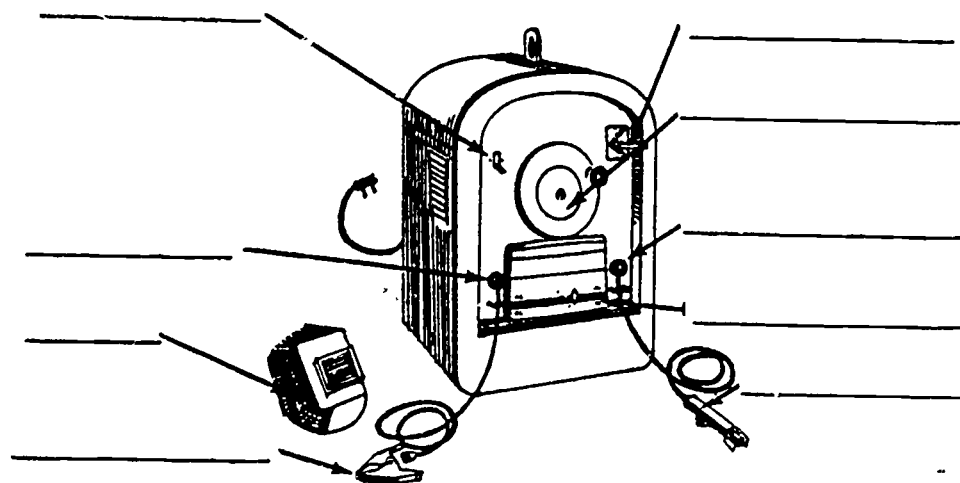
SAFETY QUIZ

1. You should warn anyone nearby when you start to weld.
2. Goggles as well as a welding hood should be available before you start to weld.
3. A closed container is dangerous to weld.
4. Gloves are not necessary when welding.
5. It is dangerous to weld without proper ventilation.

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 T F
 T F
 T F
 T F

安全測驗

1. 當你開始燒焊時要警告在你附近的人。 是 非
2. 在你開始燒焊前，頭盔護目鏡一定要準備好。 是 非
3. 密封的箱子是對燒焊有危險的。 是 非
4. 燒焊時要帶手套。 是 非
5. 在沒有適當的通風設備下燒焊是危險的。 是 非



OBTAIN PERMISSION FROM THE INSTRUCTOR
BEFORE USING THIS MACHINE.

Oxy-Acetylene Welder

未得教師准許不得操作此機器

氧乙炔熔焊機

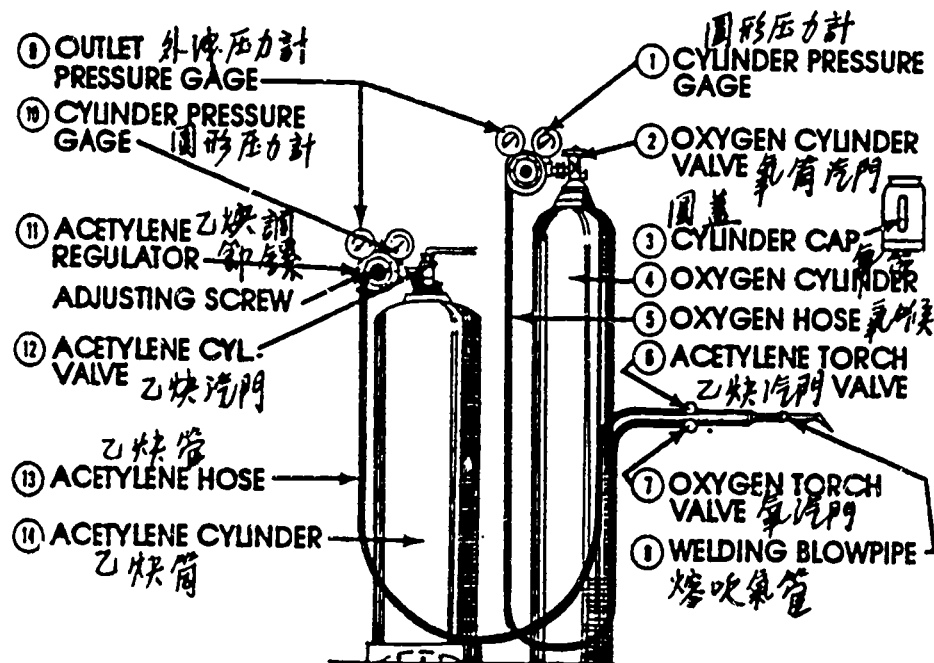
SAFETY SUGGESTIONS

1. Do not weld galvanized metal without proper ventilation.
2. Do not allow oil to come in contact with hoses or equipment.
3. Gas bottles must be erect and secure at all times.
4. Protective goggles and spark-resistant clothing must be worn when welding.
5. Do not weld or cut on a closed container without instructor's approval.
6. Confine all cutting and welding to the designated area in the shop.
7. Turn off torch valves when finished with equipment.
8. Keep the cylinder caps on the bottles when not in use.
9. Turn off gas and oxygen at tanks or stations at the end of class session.
10. Bend the end of long welding rods to identify hot end and to reduce potential exposure to eye injury.



安全建議

1. 無適當之通風設備不得燒焊鍍鋅的金屬。
2. 不要讓油漬與鋼管或器械接觸。
3. 常常裝好空氣瓶。
4. 當燒焊時一定要戴護目鏡和防火花衣。
5. 無教師之准許不得燒焊或切密封的容器。
6. 在工場指定之地點操作切或燒焊。
7. 當用完設備後關掉汽門。
8. 當不用時待瓶壓完好。
9. 每堂課完時關掉氣和氣箱。
10. 將長焊條彎曲去証明熱端以減少眼睛可能受到傷害的機會。



OXY-ACETYLENE WELDER

Student Name _____
 Class _____
 Date _____ Grade _____

氧乙炔熔焊機

學生姓名 _____
 級別 _____
 日期 _____ 成績 _____

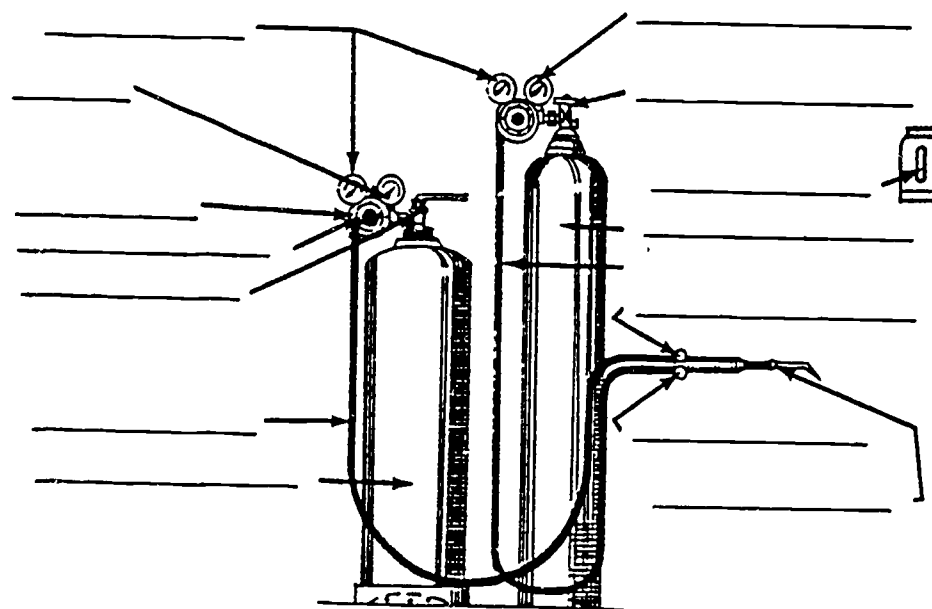
SAFETY QUIZ

1. Gas bottles may be laid on the floor when not in use.
2. Closed containers are not hazardous to weld or repair.
3. The cylinder caps should be placed on all bottles when not in use.
4. Eye protection must be worn for all welding, cutting and chipping operations.
5. The equipment should not be wiped down with oily rags.

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 T F

安全測驗

- | | | |
|------------------------|---|---|
| 1. 當不用時可以將氣瓶放在地板上。 | 是 | 非 |
| 2. 密封的容器無危險性(燒焊或修理) | 是 | 非 |
| 3. 當不用時圓蓋應裝在瓶子上。 | 是 | 非 |
| 4. 所有熔焊、切割或打碎時一定要戴護眼鏡。 | 是 | 非 |
| 5. 不要用油布去抹機器 | 是 | 非 |



OPERATION CHECK LIST OXY-ACETYLENE WELDER

操作氧乙炔熔焊機之步驟

1. Obtain permission from the teacher to use oxy-acetylene welder. ()
2. Adjust welder for operation in following sequence:
 - a. Inspect regulator's adjusting screws to insure that they are all the way out (counterclockwise). ()
 - b. Open oxygen cylinder (green) valve slowly. (wide open -- stand to one side) ()
 - c. Open acetylene cylinder (red) valve ($\frac{1}{2}$ to $\frac{3}{4}$ turn) ()
 - d. Open the torch oxygen valve one turn. ()
 - (1) Turn oxygen regulator valve adjusting screw until proper reading is obtained. ()
(See chart for tip being used.)
 - (2) Turn off torch oxygen valve. ()
 - e. Turn the acetylene regulator adjusting screw in slowly until correct reading is obtained for tip being used. ()
3. Lighting torch procedure:
 - a. Turn torch acetylene valve $\frac{1}{16}$ of a turn, then ignite acetylene gas coming from tip with spark lighter. ()
 - b. Readjust the acetylene regulator adjusting screw until the correct reading is obtained. ()
 - c. Turn acetylene torch valve on slowly until flame jumps away from tip, then slightly reduce the fuel supply to bring the flame back to the tip. ()
 - d. Adjust torch oxygen valve to obtain neutral flame. ()

Do I understand the following operating instructions?

- | | | |
|--|-----|----|
| 1. I must wear welding goggles when gas welding. | Yes | No |
| 2. I must never lay down a lighted torch. | Yes | No |
| 3. I must never use acetylene gas at a pressure greater than 15 lbs. per square inch. | Yes | No |
| 4. I must be careful not to burn hoses. | Yes | No |
| 5. I must replace goggles, hoses and torch in proper places and clean up area when I am through welding. | Yes | No |
| 6. I must have teacher check my set up before lighting torch. | Yes | No |

STUDENT'S NAME _____ TEACHER'S INITIALS _____

1. 操作氧乙炔熔焊機要得教師准許。 ()
2. 以以下步驟調整氧乙炔熔焊機以備操作:
 - a. 檢查所有的螺絲是否逆時鐘方向。 ()
 - b. 慢慢打開氧筒(青色)。(打開一站在一旁) ()
 - c. 打開乙炔筒(紅色)汽門(半至全轉) ()
 - d. 打開氧汽門(轉一週)。 ()
 - (1) 將氧汽門調整至能正確地表明度量(參閱表) ()
 - (2) 關去氧汽門。 ()
 - (c) 慢慢打開乙炔汽門輕至能正確表明度量。 ()
3. 點火步驟:
 - a. 輕微開乙炔汽門,並用火花燃器點燃乙炔氣 ()
 - b. 重新調整乙炔控制器至能正確表明度量 ()
 - c. 慢慢開啟乙炔火至火從末端噴出,然後慢慢減低燃料至火頭回到末端。 ()
 - d. 調整氧火汽門去取得中性火。 ()

我明白以下之操作步驟嗎?

- | | | |
|--------------------------------|----|-----|
| 1. 當燒焊時我得戴護目鏡。 | 明白 | 不明白 |
| 2. 我永不要放下一燃著火棒。 | 明白 | 不明白 |
| 3. 我永不要在氣壓大於 15 磅/每平方英吋時使用乙炔氣。 | 明白 | 不明白 |
| 4. 我要小心不要去燒著喉管。 | 明白 | 不明白 |
| 5. 當燒焊完後我一定要清理好護目鏡,喉管和火棒並放回原位。 | 明白 | 不明白 |
| 6. 當燃火前我一定要得教師同意。 | 明白 | 不明白 |

學生姓名 _____ 教師署名 _____